CHINA
INDUSTRIAL HANDBOOKS
CHEKIANG

SECOND SERIES OF THE REPORTS BY THE NATIONAL INDUSTRIAL INVESTIGATION

Compiled and published by
BUREAU OF FOREIGN TRADE
MINISTRY OF INDUSTRY
SHANGHAI
1935

FOREWORD TO THE CHINA INDUSTRIAL HANDBOOK

LACK of adequate capital and the inexperience of technical experts have been generally regarded as responsible for the tardy progress which, so far, Republican China made in the way of economic reconstruction. But while it is true that China's slow industrial progress and the relative backwardness of her general economic conditions may, to a large extent, be directly traced to lack of industrial and financial capital and the relatively undeveloped state of her modern industrial technique, it is also undeniable that uncertainty as to essential facts and the absence of reliable statistical data to guide the calculation and formulation of concrete projects, are also definite obstacles in the way of China's industrialisation.

In veiw of the extensive character of China's territorial area the loosely-knit organisation of China's present national economy, and other circumstances, the very essentials to a general mobilisation of capital and labour, any such movement to take place simultaneously in all parts of China would be impracticable and unrealistic, and doomed to failure from the very beginning. It has been my firm conviction, ever since I took office as Minister of Industry, that in order to bring about fruitful result, it would be a more practical policy to start work in one specific area to serve as a general foundation for the gradual industrialisation of the whole country. For this reason I have selected the Yangtse Valley as the national centre for heavy industries, and hope that within four or five years our efforts will be rewarded by some concrete achievements. In this way alone can closer co-operation in industrial and other economic matters between the people and the Government be brought about. Under the new circumstances created by the industrialisation of the Yangtse Valley, China will be adequately equipped to cope with any eventualities that may arise in the Pacific. China, then self-sufficient even if cut off from the outside world, would

be able to meet any situation brought about by forces and circumstances beyond her control.

In the drawing-up of plans for the development of industry, agriculture, commerce, and mining in the Yangtse Valley, I have been greatly handicapped by the lack of dependable statistics for reference and guidance. It was this which induced me to instruct Mr. Ho Ping-Yin, Director of the Bureau of Foreign Trade, to make investigations and detailed surveys of China's mineral, agricultural and other resources, transportation facilities, market conditions, and other relevant matters.

The fruits of these investigations are embodied in this series of China Industrial Handbooks which are being compiled under the direction of Director Ho. Being a pioneer effort, and compiled under exceptionally difficult circumstances, this work cannot claim to be exhaustive, but it is the first comprehensive and authoritative reference-book of its kind, and as such will doubtless meet a need which has long been felt.

CHEN KUNG-PO.

Ministry of Industry.
Nanking, June 30, 1933.

PREFACE TO THE CHINA INDUSTRIAL HANDBOOK

"WHAT is the motive of the Ministry of Industry in making an investigation of domestic industries? And what is the use of such an investigation?" These questions some of our readers will quite naturally raise, and before I proceed to explain the methods used in conducting investigations a few words of explanation in reply to the above questions may not be out of place.

It is only too evident that the cause of China's weakness is poverty, the equally obvious result of a decline in national production which has rendered enterprises hardly capable of maintaining their existance. Lack of capital and of experienced technicians are other causes which have been regarded by most people as contributary causes of China's weakness. It is true that these are essential factors in economic progress, but to foster the growth and development of any enterprise fundamental knowledge and statistical information are also indispensable. For instance, in contemplating the establishment of an iron and steel plant, it is imperative to know where deposits of iron-ore and coal are available, their quantity and quality of those supplies, and the specific demand of the market. To act without such knowledge is like a seaman piloting a ship in strange waters without a chart, and failure is a certainty even with the advantages of sufficient capital and experienced technicians.

China is a vast country rich in natural resources, but there has never been any systematically conducted investigation of domestic industries, with the result that nobody has an exact and clear idea as to the real extent of this natural wealth. While such fundamental knowledge is unavailable it is well-nigh impossible for the Government to draw up any plans for national industrial development, nor is it possible for the individual promoter to develop domestic industries, with any confidence.

It was with the object of establishing a statistical foundation upon which the government can proceed with its reconstruction of the country, and also as a guide to private enterprise in industrial undertakings that the Ministry of Industry undertook this investigation.

On August 6, 1932, this Bureau was instructed by the Ministry to investigate the industrial condition of the whole country, and to compile and publish in book form the information and statistical date thus gathered. Realizing the great importance of this work, after much deliberation and discussion, we drafted the following plan for conducting investigation:—

I. SECTIONAL AREAS

China has been divided into four groups of provinces, each province being a separate unit for investigation. The entire undertaking is to be completed in four periods. The four groups are

Kiangsu, Chekiang, Hupeh, Hopei, and Kwangtung.

Anhui, Kangsi, Hunan, Fukien, Szechuen, and Shantung.

Kwangsi, Shensi, Shansi, Yunnan, Kweichow, Honan, Kansu, Sinkiang, and the Three Eastern Provinces.

Jehol, Suiyuan, Chahar, Chinghai, Mongolia, and Thibet.

II. SCOPE OF INVESTIGATION

Manufacturing Industries.—Both handicrafts and industries involving the use of machinery are included. Great pain has been taken in acquiring accurate statistics regarding the number of factories or workshops and operatives, capital invested, supply of raw materials, manufacturing processes, varieties of products, selling methods, and principal markets. Localized handicrafts, like porcelain industry in Kiangsi, wine making in Shaohsing, and fan-making in Hangchow and Soochow, are given particular attention.

Commerce.—Detailed information regarding business organization and customs, varieties of *Chuang* (庄) and *hong* (行), local currency systems, and trade tendencies have been obtained from reliable sources.

Mining.—The mineral products of verious districts, organization and working conditions of mining companies,

statistics showing production and sales of mineral products, are points which have been treated with particular care.

Agriculture.—In investigating agricultural conditions in various districts, we aimed at securing accurate statistics and reliable data relating to the production and distribution of agricultural products, systems of land tenancy, selling, buying, and mortgaging of land, rural finance, labor conditions, and secondary occupations of the farming class.

Fishery and Marine Products.—Detailed information regarding the production and distribution of marine products and of fish culture has been gathered in the course of our investigation.

Method of Investigation.—In most cases members of our staff were sent to various districts to gather first-hand information, acting in co-operation with local organizations and individuals. Supplementary data have been obtained from official documents, handbooks of the province and its districts (省縣志書), and various other publications.

The above is a rough outline of the method being followed for an industrial investigation of the whole country. We expect to complete the first stage of this work — namely, investigation of the five provinces of Kiangsu, Chekiang, Hupeh, Hopei and Kwangtung—in two years. After four months of strenuous effort we are able to present the first result of our inquiry in the form of this handbook. Acknowledgements are here made to the Provincial Governments, District Governments, Local Chambers of Commerce, and trade-unions of this province, whose sincere co-operation aided materially the work of investigation. To Mr. D. K. Lieu and Dr. S. W. Kung we are indebted for valuable criticisms and suggestions. Thanks are also due to Messrs. Chiang Hsueh Kai, Lu Kuo Hsiang, Feng Ho Fa, Hsieh Che, Ma Chi Po, Hsiao Kuo Tso, Yao Fang Jen and Chao Chien—members of the staffs of the Bureau of Foreign Trade—who have done their work with great perseverance and energy in spite of numerous difficulties and obstacles, and to Messrs. Yuan Ching Ju, Yen Chi Kwang, Kuo Wei Peh, Hou Hou Chi, Li Hsien Chuan, Yang Tsu Chun, Chen Wang Tai, Wang Po Yen, Chen Ching Sheng, Pan Cheng Yin, Wu Hsien Hsu, Hsu Chung Yen and Tao Chung Chi, who have prepared the reports for

publication within a surprisingly short period of time. Lastly, we desire to express our appreciation of the services rendered by Mr. Hou Hou Pei, our chief investigator, and Mr. Chu Hsi Nung, our chief editor. It is mainly due to their untiring efforts and harmonious co-operation that we have been able to publish this book in its present form.

HO PING-YIN.
Directing-Editor

Shanghai, July 15, 1933.

PREFACE TO CHINA INDUSTRIAL HANDBOOKS: CHEKIANG

AFTER three months devoted to investigation work and another three months to the task of compilation, the second of the "China Industrial Handbooks," devoted to Chekiang, is now ready for publication. The methods employed in our investigation were similar to those adopted for Kiangsu Province. The territory was divided into seven sections for investigation, the first section being further divided into sub-sections, including 22 *hsien* in the western part of the province and the Hangchow Municipality. The other six sections covered the remaining 53 *hsien* in Eastern Chekiang.

Chekiang being primarily an agricultural province, particular attention has been given to the subjects of land tenancy and sericulture. We are greatly indebted to the College of Agriculture, Chekiang University, from which institution much valuable data on sericultural enterprises was obtained, and to the Provincial Reconstruction Bureau, which furnished most of the data on the mineral resources of the Province. In conducting our investigation numerous difficulties were encountered, especially in dealing with the vastly different economic conditions existing in various *hsien*, and the fact that the standard system of weights and measures has not been effectively enforced in many localities also created confusion. It was largely due to assistance and suggestions from various local authorities and experts that completion of the investigation was made possible, and grateful thanks are given to the Chekiang Provincial and local Governments, public and private organizations, Chambers of Commerce, guilds, research institutions, and many individuals for valuable help in obtaining the desired information.

Under the direction of Messrs. Chu Hsi-nung and Hou Hou-pei, assisted by Messrs. Yuan Ching-ju, Lu Kuo-hsiang, Hou Hou-chi, Chiang Hsueh-kai, Yao Fang-jen, Yang Chu-

chun, Ma Chi-po, Hsieh Che, Chao Kang-chieh, and Li Hsien-chuan, we are able to present this volume completed in accordance with our original plan. Since the publication of the Kiangsu Industrial Handbook, in Chinese and English editions, we have received from readers both criticism and praise, and we are grateful for the many suggestions made for th improvement of subsequent volumes, most of which we adopted in preparing the present handbook. We realise, however, that the Chekiang Handbook is not as satisfactory as it should be, and we cordially invite further criticism and suggestions, so that further improvements may be made in the volume for Shantung, in which province investigations are now in progress.

HO PING-YIN,
Directing-Editor.

Shanghai: September, 1933.

PREFACE TO THE CHINA INDUSTRIAL HANDBOOKS: CHEKIANG

FOLLOWING the completion of investigations into industrial and economic conditions in Kiangsu Province, similar work was immediately started in Chekiang Province, in accordance with the plan of the Ministry of Industry for conducting a nation-wide industrial investigation. The forms and questionnaires, which had been repeatedly revised until approved by experts and economists, were used in Kiangsu Province more as an experiment than as final forms, but this practical test of their usefulness and practicability was very encouraging, as publication of the Kiangsu volume was followed by favorable criticisms.

There are numerous similarities and extremely close relations between the two provinces of Kiangsu and Chekiang, both historically and topographically. Although the latter province is industrially far behind Kiangsu, the difference is only one of degree, and therefore the investigation-forms and questionnaires concerning industrial conditions which were used in Kiangsu were also found suitable for Chekiang, while little or no change was made in the other forms used for recording information relating to finance, commerce, communications, agricultural production, etc.

Chekiang Province is divided into 75 administrative *hsien*. It was originally planned that the collection of industrial and commercial information in the Province should be carried on without interruption from January, 1933, but owing to the approach of the Lunar Year—when business transactions are settled the original schedule for investigation work had to be modified. Geographically, Chekiang is divided into Eastern and Western sections, the former being larger in area and consisting of 53 districts, while in the western section there are only 21 districts and one municipality (Hangchow). Investigation was first started in the western section with the hope that the work would be completed before the end of the Lunar

year. Despite the short time allowed, the work was completed as originally planned due to the energetic efforts of our investigators and their systematic division of labor. The work in this section was carried out by seven groups of investigators, and among those who are mainly responsible for division of work credit should be given to Messrs. Lu Kuo-hsiang, Yao Fang-jen, Ma Chi-po, Feng Ho-fa and Hsieh Chê.

The investigators for the eastern section of Chekiang set to work on February 10, and of their task was completed after two months on April 13, thanks to the efforts of Messrs. Yang Chu-chun, Chiang Hsueh-kai, Yao Fang-jen, Ma Chi-po, Hsieh Chê and Lu Kuo-hsiang. It is gratifying to record that investigation work for the whole province was completed within a period of little more than three months, despite difficulties of transport in the eastern part and local unsettled conditions. We were also fortunate in receiving valuable assistance from many industrial and trade organizations and individuals in gathering materials.

The work of compilation, revising, and editing took another three months for completion, and the result is the presentation of a volume somewhat similar in scope to the Kiangsu Industrial Handbook. The editorial staff responsible for the production of this volume consists of Messrs. Yuan Ching-ju, Yen Chi-kuang, Kuo Wei-po, Hou Hou-chi, Li Hsien-chuan, Chao Kang-chieh, Chen Wang-tai, Wang Po-yen, Tao Chung-chi, Hsu Chung-hsien, and Cheng Liu-hsin and Misses Chung Hui-ying and Tsai Lu-pi.

The silk industry of Chekiang takes an important place in the economics of China, and the producing districts cover a wide area, making the marketing problem more difficult. We fear that during the short time available the investigation of the silk industry was not very thoroughly done, and for this reason we secured the co-operation of the Agricultural Department of Chekiang University for constant advice and comment. For data on silk piecegoods, mining and industrial conditions we were indebted to the Chekiang Reconstruction Department, Municipality of Hangchow, and Silk Piecegoods Merchants' Guild, the Economic Investigation Bureau, factories, and individuals for their generosity in furnishing and collecting materials.

In this volume a special chapter on the tenancy system is included, the material being obtained from various *hsien* where complete statistics are available.

In conclusion, acknowledgement must be made to those who have given us valuable assistance, suggestions, and advice, to Mr. Wei Sung-tang, who helped in gathering data on sericulture and land taxes, Messrs. Sun Pen-chung, Li An, and Chiu Liang-ju, on the silk industry, Mr. Wu Ching-ching, on industrial enterprises, Mr. Chin Wei-kai, on mining, Messrs. Hu Chien-chung and Hsu Shao-tang, on the land-tenancy system, Mr. Chen Chung-ming, on co-operative organizations, Mr. Wu Hsiang-chien, on weights and measures, Messrs. Yao Chin-tiao, Wang Teh-fa, Wang Wen-tai, Chen Mou-lang, and Liu Tao-min, on fishery and marine products, Messrs. Ke Tan-chen, Chung Yen-shen, Sun Kuang-hsi, and Ho Kui-yu, on agricultural production and stock-raising; and Messrs. Feng Shao-fu, Hsu Shu-chi, Chu Hui-ching, Ma. Sun-po, Chu Chung-kuang, Tsai Pin-hsien, Wu Chiu, Sun Kung-hsu, Tsai Shih-hsiung, Hsiao Chi-kan, Hsu Shao-chen, and Chang Li-cheng and Misses Sun Min and Sun Chou-yin, who helped in gathering data on various subjects.

CHU HSI-NUNG,
HOU HOU-PEI.

September, 1933.

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BOOK ONE

INTRODUCTION

CHAPTER I

HISTORY

CHEKIANG is a populous province in Central China, rich in natural resources and with good communication facilities. The fishery, marine products, and salt industries of its coastal districts, the silk and tea grown in the Chientang River (錢塘江) valley, the rich deposits of coal, fluorite, alum, and limestone, the large crops of rice, wheat, beans, and fruits, and its well-developed textile and paper industries give this Province a position economically second only to Kiangsu.

The province of Chekiang formed part of Yangchow (揚 州) during ancient times, and in the early Chou (周) Dynasty belonged to the states of Wu (吳) and Yueh (越) but was later annexed by the state of Chu (楚). When feudalism was abolished by the First Emperor of Ch'in (秦), this area was divided into three provinces, Kuichi (會稽), Chang (鄣), and Minchung (閩中). Emperor Wuti (武帝) of Han (漢) changed the names of Chang and Minchung into Yangchow and Tanyang (丹陽) respectively. During the period of the Three Kingdoms it formed part of the Kingdom of Wu (吳), and consisted of the four provinces of Kuichi, Linhai (臨海), Wuhsing (吳興) and Tungyang (東陽). The Chin (晉) Emperors created two more provinces out of this area, Wuchun (吳郡) and Hsinan (新 安), and these names were retained with slight modifications during the Six Dynasties. These small provinces were united into Kiangnan (江 南) province during the early part of the Tang (唐) Dynasty, though later, during the reign of Emperor Suchung (肅宗), it was again divided into Eastern and Western Chekiang, and this system was followed during the Sung (宋) and Yuan (元) Dynasties. In the Ming (明) Dynasty the two were united once more to form Chekiang province, including the 11 prefectures of Hangchow (杭州), Chiahsing (嘉興), Huchow (湖州), Ningpo (甯波), Shaohsing (紹興), T'aichow (台州), Chinhua (金華), Ch'üchow (衢州), Yenchow (嚴州), Wenchow (溫州) and Ch'uchow (處州).

There were nine *hsien* under the jurisdiction of Hangchow prefecture—Ch'ientang (錢塘), Jenho (仁和), Haining (海寧), Fuyang (富陽), Linan (臨安), Yühang (餘杭), Yüch'ien (於潛), Hsinch'eng (新城) and Ch'anghua (昌化); seven under Chiahsing prefecture—Chiahsing (嘉興), Hsiushui (秀水), Chiashan (嘉善), Haiyen (海鹽), Shimen (石門), P'inghu (平湖) and T'unghsiang (桐鄉); six under Huchow prefecture—Wucheng (烏程), Kuian (歸安), Ch'anghsing (長興), Tehts'ing (德清), Wuk'ang (武康), and Hsiaofeng (孝豐), and Anchichow (安吉州); six under Ningpo prefecture—Ninghsien (鄞縣), Ts'uch'i (慈谿), Fenghua (奉化), Chenhai (鎮海), Hsiangshan (象山), and Tinghai (定海); eight under Shaohsing prefecture—Shanyin (山陰), Kuichi (會稽), Hsiaoshan (蕭山), Chuchi (諸暨), Yüyao (餘姚), Shangyü (上虞), Ch'enghsien (嵊縣), and Hsingch'ang (新昌); six under T'aichow prefecture—Linhai (臨海), Huangyen (黃巖), T'ient'ai (天台), Hsienchü (仙居), Ninghai (甯海), and T'aiping (太平), eight under Chinhua prefecture—Chinhua (金華), Lanch'i (蘭谿), Tungyang (東陽), Iwu (義烏), Yungk'ang (永康), Wui (武義), P'ukiang (浦江) and T'angch'i (湯溪); five under Chüchow prefecture—Hsian (西安), Lungyu (龍游), Ch'angshan (常山), Kiangshan (江山), and Kaihua (開化); six under Yenchow prefecture—Chienteh (建德), Shunan (淳安), T'unglu (桐廬), Shuian (遂安), Shouch'ang (壽昌), and Fenshui (分水); five under Wenchow prefecture—Yungchia (永嘉), Lots'ing (樂清), P'ingyang (平陽), Juian (瑞安) and T'aishun (泰順), and ten under Ch'uchow prefecture—Lishui (麗水), Ts'ingt'ien (青田), Chinyun (縉雲), Sungyang (松陽), Shuich'ang (遂昌), Lungchuan (龍泉), Ch'ingyuan (慶元), Yunho (雲和), Hsuanp'ing (宣平), and Chingning (景寧).

Toward the latter part of the Tsing Dynasty Hainingchow (海寧州) and the four *t'ing* (廳) of Shipu (石浦), Nantien (南田), Tinghai (定海), and Yühuan (玉環) were added to the province. With the establishment of the Republic prefectures were abolished and four circuits established in their stead—the Chientang Circuit (錢塘道), controlling 20 *hsien*, Kuichi Circuit (會稽道), controlling 20 *hsien*, Chinhua Circuit (金華道), controlling 19 *hsien*, and Aohai Circuit (甌海道), controlling 16 *hsien*. Sub-

sequently the circuit system was abolished and the Province divided into 75 *hsien* districts, all directly under the jurisdiction of the Provincial Government. In 1928 two municipalities were created from Hanghsien and Ninghsien, known as Hangchow and Ningpo municipalities, but after a time the Ningpo Municipality was abolished, and at present the Province includes one municipality and 75 *hsien* districts, as follows:—

Municipality:
Hangchow .....杭州

Hsien districts:
Hanghsien .....杭縣
Haining .....海寧
Fuyang .....富陽
Yühang .....餘杭
Linan .....臨安
Yüch'ien .....於潛
Hsinteng .....新登
Ch'anghua .....昌化
Chiahsing .....嘉興
Chiashan .....嘉善
Haiyen .....海鹽
Ts'ungteh .....崇德
P'inghu .....平湖
T'unghsiang .....桐鄉
Wuhsing .....吳興
Ch'anghsing .....長興
Tehts'ing .....德清
Wuk'ang .....武康
Anchi .....安吉
Hsiaofeng .....孝豐
Ninghsien (Ningpo) 鄞縣(寧波)
Ts'uch'i .....慈谿
Fenghua .....奉化
Tinghai .....定海
Nant'ien .....南田
Hsiaoshan .....蕭山
Chenhai .....鎮海
Hsiangshan .....象山
Shaohsing .....紹興
Chuchi .....諸暨
Yüyao .....餘姚
Shangyü .....上虞
Ch'enghsien .....嵊縣
Hsinch'ang .....新昌
Linhai (Taichow) ..臨海(台州)
Huangyen .....黃巖
Ninghai .....寧海
Wenling (T'aiping) .溫嶺(太平)
T'ient'ai .....天台
Hsienchü .....仙居
Chinhua .....金華
Lanch'i .....蘭谿
Tungyang .....東陽
Iwu .....義烏
Yungk'ang .....永康
Wui .....武義
P'ukiang .....浦江
T'angch'i .....湯溪
Chühsien (Chüchow) 衢縣(衢州)
Lungyu .....龍游
Kiangshan .....江山
Ch'angshan .....常山
K'aihua .....開化
Chienteh (Yenchow) 建德(嚴州)
Shunan .....淳安
T'unglu .....桐廬
Shuian .....遂安
Shouch'ang .....壽昌
Fenshui .....分水
Yungchia (Wenchow) 永嘉(溫州)
Juian .....瑞安
Lots'ing .....樂清
T'aishun .....泰順
Yühuan .....玉環
Ts'ingt'ien .....青田
Chinyun .....縉雲
Shuich'ang .....遂昌
Ch'ingyuan .....慶元
Hsuanp'ing .....宣平
P'ingyang .....平陽
Lishui (Ch'uchow) ..麗水(處州)
Sungyang .....松陽
Lungch'uan .....龍泉
Yunho .....雲和
Chingning .....景寧

CHAPTER II

LOCATION AND AREA

CHEKIANG is the smallest in area of the Chinese provinces, and lies between longitude 117° and 123° E. and latitude 27° and 31° N. It faces the China Sea on the east and is bounded by Kiangsu on the north, Fukien on the south, and Kiangsi and Anhui on the west. The Chientang River traverses almost the whole Province from north to south, dividing it into two parts. With the exception of the districts near T'aihu Lake (太湖) and the delta at the mouth of Chekiang River, the plains in this Province are not large, as there are many mountain ranges. A large number of islands are dotted along the coast, the three largest being Tinghai, Yühuan and Nant'ien. There are three open ports in the Province, Hangchow, Ningpo, and Wenchow, which have been important commercial centers since the Sung Dynasty. Owing to the accumulation of silt at the mouth of the Chientang River and the irregular tides, seagoing ships cannot reach Hangchow, which is now only important as a river port.

According to a survey made by the Chinese Government in 1902, the area of the Province is 36,670 square miles, or 286,246 square *li*, but S. W. William, in his book "The Middle Kingdom" puts the figure at 39,150 square miles or 305,605 square *li*, while A. R. Colquhoun's estimate, given in "China in Transformation," is 35,000 square miles, or 273,210 square *li*. A Japanese writer puts the figure as high as 108,833 square miles. Perhaps the most reliable figure obtainable is that given by the Bureau of Military Survey, according to which the area of the Province is 398,882 square *li*, or 215,396,471 *mou*. As this figure includes bays, the true area of the Province, after deducting these, is found to be 309,363 square *li*.

The areas of the various districts vary considerably, ranging from the 11,389 square *li* of Yungchia to 739 square *li* of Nant'ien.

The area of lowlands, including cultivated fields, area occupied by buildings, and reclaimed sand and salt marshes, amounts to 76,025 square *li*, representing 24.56 per cent of the total area of the Province. The plains in the districts of Chiahsing, Wuhsien and Hanghsien are extensive in area, as very few mountains are found in those districts, while in the districts of Yunho and Hsuanp'ing, there are only small patches of lowlands and many mountains. About 71.19 per cent of the area of the Province consists of mountains and plateaux, amounting to 220,266 square *li*. The district of Yungchia is the most mountainous in the Province, the area of plateaux and mountains in that district being as much as 9,306 square *li*. The districts of Shunan and Ts'ingt'ien are also mountainous, while the districts of Chiahsing, Chiashan, Ts'ungteh and T'unghsiang are entirely free of mountains or hills. Very few plateaux and mountains are found in the districts of P'inghu, Haining, Haiyen and Tehts'ing. The area of lakes and streams amounts to 7,239 square *li*, representing 2.34 per cent of the total. The districts of Wuhsing and Ch'anghsing, being situated around Taihu Lake and traversed by a large number of streams, have the largest area of water-surface, amounting to 617 and 667 square *li* respectively, Shaohsing and Hanghsien coming next with 316 and 304 square *li*. The districts of Linan and Nant'ien have the smallest area of water-surface, amounting to 8 square *li* only.

The area occupied by railways and highways in the Province is about 556 square *li*, representing 0.17 per cent of the total. The district of Hanghsien and Municipality of Hangchow, being traversed by many roads, has 32 square *li* of road-surface. Yungchia and Chiahsing come next with 21 and 15 square *li* respectively, while in Wenling, Nant'ien, and Hsinteng, there are only two square *li*. The area of sand beaches along the coast and river-banks amounts to 5,277 square *li*, representing 1.71 per cent of the total area of the Province. The following table shows details of the area, in square *li*, of each district in the Province:—

	Plains	Mountains & Plateaus	Railroads & Highways	Water-surfaces	Sand beaches	Total
Municipality of Hangchow and Haining	1,665	33	10	36	36	1,780
Fuyang	754	2,605	5	127	7	3,498
Yühang	851	1,223	5	33	—	2,112
Linan	429	2,526	4	8	—	2,967
Yüch'ien	313	2,465	4	19	—	2,801
Hsinteng	185	1,662	2	13	—	1,862
Ch'anghua	232	3,822	4	17	—	4,075
Chiahsing	3,017	—	15	164	—	3,196
Chiashan	1,247	—	6	127	—	1,380
Haiyen	1,487	52	6	32	39	1,616
Ts'ungteh	1,116	—	5	29	—	1,150
P'inghu	1,474	22	6	63	43	1,608
T'unghsiang	1,106	—	5	24	—	1,135
Wuhsing	3,868	1,038	12	617	—	5,535
Ch'anghsing	2,488	1,825	10	667	—	4,990
Tehts'ing	1,016	61	4	104	—	1,185
Wuk'ang	434	947	3	30	—	1,414
Anchi	948	1,120	4	23	—	2,095
Hsiaofeng	572	2,834	5	29	—	3,440
Ninghsien	1,872	2,034	12	195	40	4,153
Ts'uch'i	1,480	871	8	70	70	2,499
Fenghua	962	2,778	8	66	81	3,895
Chenhai	1,196	945	5	59	217	2,422
Tinghai	703	2,606	7	30	349	3,695
Hsiangshan	714	2,163	6	49	356	3,288
Nant'ien	124	551	2	8	54	739
Shaohsing	2,634	2,634	11	316	179	5,774
Hsiaoshan	1,980	572	7	144	125	2,828
Chuchi	1,825	4,379	9	138	3	6,354
Yüyao	2,548	1,296	11	107	511	4,473
Shangyü	1,13?	1,471	6	120	89	2,819
Chenghsien	1,184	4,345	9	107	12	5,657
Hsinch'ang	502	3,274	7	48	—	3,831
Linhai	2,057	5,453	11	206	281	8,008
Huangyen	1,710	2,313	8	53	85	4,169
Haining	1,311	5,459	10	66	600	7,446
Wenling	1,331	1,092	2	59	454	2,938
T'ient'ai	609	4,029	6	60	2	4,706
Hsienchü	846	5,091	10	48	33	6,028
Chinhua	1,731	1,817	7	95	3	3,653
Lanch'i	1,101	1,816	7	83	27	3,034
Tungyang	1,172	5,930	12	92	46	7,252
Iwu	1,058	2,244	8	48	2	3,360

	Plains	Mountains & Plateaus	Railroads & Highways	Water-surfaces	Sand beaches	Total
Yungk'ang	674	3,218	6	30	6	3,934
Wui	629	1,946	4	56	—	2,635
P'ukiang	537	3,137	4	25	1	3,704
T'angch'i	730	1,800	4	43	18	2,595
Chühsien	1,735	5,108	12	160	30	7,045
Lungyu	934	2,347	5	48	34	3,368
Kiangshan	989	4,994	8	55	13	6,059
Ch'angshan	585	2,825	5	61	13	3,489
K'aihua	551	5,931	9	64	—	6,555
Chienteh	349	4,548	6	125	9	5,037
Shunan	591	7,929	9	122	1	8,652
T'unglu	397	2,518	4	75	10	3,004
Shuian	586	3,922	5	50	—	4,563
Shouch'ang	267	1,937	3	17	—	2,224
Fenshui	199	2,054	3	14	—	2,270
Yungchia	1,525	9,306	21	373	164	11,389
Juian	1,359	4,310	10	219	117	6,015
Lots'ing	1,017	2,444	8	95	305	3,869
P'ingyang	1,666	4,525	10	141	172	6,514
Taishun	238	5,419	7	87	9	5,760
Yühuan	257	1,127	5	33	361	1,783
Lishui	405	2,979	6	58	18	3,466
Ts'ingt'ien	264	7,888	11	156	58	8,377
Chinyun	361	4,682	7	56	9	5,115
Sungyang	450	3,662	6	65	8	4,191
Shuich'ang	350	7,199	9	102	1	7,661
Lungch'uan	388	7,822	9	49	53	8,321
Ch'ingyuan	246	5,389	7	32	47	5,721
Yunho	157	2,742	5	27	16	2,947
Hsuanp'ing ...	157	2,588	5	24	—	2,774
Chingning	213	5,845	7	44	42	6,151
Total	76,025	219,666	556	7,239	5,277	309,363

CHAPTER III

POPULATION

ACCORDING to an investigation conducted by the Ministry of Interior, the population of Chekiang Province was 21,440,151 in 1912, 22,690,494 in 1916, and 24,377,298 in 1918. The report of the Provincial Government of Chekiang for 1928 shows that the population of the Province during that year was 20,632,701, while the present investigation, made in 1932, puts the figure at 20,724,473. The following is a table of population statistics since 1912:—

	Male	Female	Total
1912	11,506,858	9,993,293	21,440,151
1913	11,762,701	10,119,351	21,882,052
1914	11,903,779	10,221,973	22,125,752
1915	12,195,440	10,276,372	22,471,812
1916	12,346,543	10,343,951	22,694,494
1918	13,592,251	10,785,047	24,377,398
1928	11,603,889	9,028,812	20,632,701
1933	11,444,457	9,280,016	20,724,473

The following is a comparison between the result of the 1928 investigation made by the Chekiang Provincial Government and the present investigation:—

	Results of Chekiang Provincial Government's Investigation of 1928	Results of the 1933 investigation by the Ministry of Industry	Increase	Decrease
Municipality of Hangchow ..	426,916	524,012	97,096	——
Hanghsien ...	390,351	387,907	——	3,444
Haining	355,737	351,122	——	4,615
Fuyang	205,676	209,905	4,229	——
Yühang	125,947	133,002	7,055	——
Linan	86,124	83,388	——	2,736
Yüch'ien	59,648	63,775	4,127	——
Hsinteng	60,160	62,351	2,191	——
Ch'anghua ...	78,068	76,605	——	1,463
Chiahsing	449,301	421,549	——	27,752

	Results of Chekiang Provincial Government's Investigation of 1928	Results of the 1933 Investigation by the Ministry of Industry	Increase	Decrease
Chiashan	220,911	203,000	——	17,911
Haiyen	212,588	210,193	——	2,395
Ts'ungteh	207,050	211,415	4,365	——
P'inghu	274,521	280,791	6,270	——
T'unghsiang ..	164,598	166,607	2,009	——
Ch'anghsing ..	236,151	241,816	5,665	——
Tehts'ing	179,018	180,537	1,519	——
Wuk'ang	57,899	66,125	8,226	——
Anchi	81,063	81,334	271	——
Hsiaofeng	82,467	84,884	2,417	——
Ninghsien	730,422	741,280	10,858	——
Ts'uch'i	309,270	278,132	——	31,138
Fenghua	258,981	222,553	——	36,428
Chenhai	381,127	445,785	64,658	——
Tinghai	413,978	383,739	——	30,239
Hsiangshan ..	212,902	210,402	——	2,500
Nant'ien	20,491	21,922	1,431	——
Shaohsing	1,164,236	1,225,458	61,222	——
Hsiaoshan	523,432	499,321	——	24,111
Chuchi	529,258	527,822	——	1,436
Yüyao	640,561	637,770	——	2,861
Shangyü	317,338	293,291	——	24,047
Chenghsien ...	428,183	422,016	——	6,167
Hsinch'ang ...	242,076	238,169	——	3,907
Linhai	537,579	537,579	——	——
Huangyen	474,039	475,955	1,919	——
Ninghai	360,898	321,333	——	39,565
Wenling	396,514	452,675	56,161	——
T'ient'ai	266,336	258,470	——	7,866
Hsienchü	220,887	220,887	——	——
Chinhua	235,034	248,530	13,496	——
Lanch'i	267,984	267,848	——	100
Tungyang	463,902	484,904	21,002	——
Iwu	294,099	302,957	8,858	——
Yungk'ang ...	264,637	277,765	13,128	——
Wui	90,511	97,783	7,272	——
P'ukiang	219,362	227,150	7,788	——
T'angch'i	119,237	118,751	——	486
Ch'ühsien	297,960	303,560	5,600	——
Lungyu	183,058	173,896	——	9,162
Kiangshan ...	268,950	280,433	11,483	——
Ch'angshan ...	134,322	133,668	——	654
K'aihua	133,237	131,679	——	1,558
Chienteh	107,916	122,376	14,460	——

	Results of Chekiang Provincial Government's Investigation of 1928	Results of the 1933 Investigation by the Ministry of Industry	Increase	Decrease
Shunan	216,171	212,831	——	3,340
T'unglu	116,512	117,348	836	——
Shuian	133,327	133,567	240	——
Shouch'ang ..	67,091	71,061	3,970	——
Fenshui	40,227	42,240	2,013	——
Yungchia	678,376	678,376	——	——
Juian	518,330	503,759	——	14,571
Lots'ing	367,209	365,711	——	1,498
P'ingyang	674,263	665,426	——	8,837
Taishun	163,243	163,300	57	——
Yühuan	155,769	178,354	22,585	——
Lishui	123,024	125,000	1,976	——
Ts'ingt'ien ...	237,263	234,946	——	2,317
Chinyun	197,911	187,124	——	10,787
Sungyang	121,574	121,574	——	——
Shuich'ang ...	125,986	117,664	——	8,322
Lungch'uan ...	140,034	148,151	8,117	——
Ch'ingyuan ...	95,048	101,621	6,573	——
Yunho	69,464	68,447	——	1,017
Hsuanp'ing ...	80,796	76,000	——	4,796
Chingning	115,701	116,277	576	——
Total	20,942,487	20,724,473	90,388	——

The following are further details about the population of each district in the Province:—

	Males	Females	Total	Males to Every 100 Females	Density per square Li.
Municipality of Hangchow ..	315,306	208,706	524,012	151.7	806.17
Hanghsien ...	214,097	173,810	387,907	123.1	145.55
Haining	189,163	161,959	351,122	116.7	197.25
Fuyang	116,656	93,249	209,905	125.1	60.00
Yühang	76,836	56,166	133,002	136.8	62.97
Linan	48,450	34,938	83,388	138.6	28.10
Yüch'ien	37,266	26,509	63,775	140.5	22.76
Hsinteng	35,564	26,787	62,351	132.7	33.48
Ch'anghua ..	42,159	34,446	76,605	122.3	18.79
Chiahsing ...	231,531	190,018	421,549	121.8	131.89
Chiashan	111,483	91,517	203,000	121.8	147.10
Haiyen	110,875	99,318	210,193	111.6	130.06

	Males	Females	Total	Males to Every 100 Females	Density per square Li.
Ts'ungteh ..	120,392	91,023	211,415	132.2	183.83
P'inghu	152,048	128,743	280,791	118.1	174.62
T'unghsiang .	93,751	72,856	166,607	128.6	146.78
Wuhsing	384,468	285,121	669,589	134.8	120.97
Ch'anghsing ..	145,952	95,864	241,816	152.2	48.46
Tehts'ing ...	101,953	78,584	180,537	129.7	152.35
Wuk'ang	39,477	26,648	66,125	148.1	46.76
Anchi	49,375	31,959	81,334	154.5	38.82
Hsiaofeng ...	48,649	36,235	84,884	134.2	24.67
Ninghsien ..	333,558	407,722	741,280	81.8	178.49
Ts'uch'i	152,220	125,912	278,132	120.8	111.29
Fenghua	122,405	100,148	222,553	122.2	57.13
Chenhai	264,054	181,731	445,785	145.2	184.05
Tinghai	206,240	177,499	383,739	116.1	103.85
Hsiangshan .	118,282	92,120	210,402	128.3	63.99
Nant'ien	12,401	9,521	21,922	130.2	29.66
Shaohsing ...	649,670	575,788	1,225,458	112.8	212.23
Hsiaoshan ..	276,130	223,191	499,321	123.7	176.56
Chuchi	297,041	230,781	527,822	128.7	83.06
Yüyao	351,731	285,969	637,700	122.9	142.56
Shangyü	157,787	135,504	293.291	116.4	104.04
Chenghsien ...	232,966	189,050	422,016	123.2	74.60
Hsinch'ang ..	130,655	107,504	238,169	121.5	62.16
Linhai	296,830	240,749	537,579	123.3	67.13
Huangyen ..	258,145	217,810	475,955	118.5	114.16
Ninghai	177,048	144,285	321,333	122.7	43.15
Wenling	242,870	209,805	452,675	115.7	154.07
Ti'ent'ai	141,023	117,447	258,470	120.0	54.92
Hsienchü	122,130	98,757	220,887	123.6	36.64
Chinhua	142,491	106,039	248,530	134.3	68.03
Lanch'i	154,152	113,696	267,848	135.5	88.28
Tungyang ...	262,555	222,349	484,904	118.1	66.86
Iwu	171,283	131,674	302,957	130.0	90.16
Yungk'ang ..	150,118	127,647	277,765	117.6	70.60
Wui	54,284	43,499	297,783	124.7	37.10
P'ukiang	124,078	103,072	227,150	120.3	61.32
T'angch'i	67,521	51,230	118,750	131.8	45.76
Chühsien	174,596	128,964	303,560	135.5	43.08
Lungyu	99,117	74,779	173,896	132.5	51.63
Kiangshan ...	160,020	120,413	280,433	132.8	46.28
Ch'angshan ...	79,384	54,284	133,668	146.2	38.31
K'aihua	75,610	56,069	131,679	134.8	20.08
Chienteh	69,697	52,679	122,376	132.3	24.29
Shunan	114,283	98,548	212,831	115.9	24.59
T'unglu	66,401	50,947	117,348	130.3	39.09
Shuian	73,300	60,267	133,567	121.6	29.29

	Males	Females	Total	Males to Every 100 Females	Density per square Li.
Shouch'ang ..	41,697	29,364	71,061	142.0	31.95
Fenshui	27,360	14,880	42,240	183.8	18.60
Yungchia	312,791	365,585	678,376	85.5	59.56
Juian	285,562	218,197	503,759	130.8	83.75
Lots'ing	203,260	162,451	365,711	125.1	94.52
P'ingyang ...	390,816	274,610	665,426	142.3	102.15
Taishun	97,980	65,320	163,300	150.0	28.35
Yühuan	98,862	79,492	178,354	124.3	100.03
Lishui	62,000	63,000	125,000	98.4	36.06
Ts'ingt'ien ..	131,740	103,206	234,946	127.6	28.04
Chinyun	106,910	80,214	187,124	133.2	36.58
Sungyang ...	69,710	51,855	121,574	134.4	29.01
Shuich'ang ..	68,160	49,504	117,664	137.6	15.35
Hsuanp'ing ..	86,226	61,925	148,151	139.2	17.80
Ch'ingyuan ..	57,810	43,811	101,621	131.9	17.76
Yunho	39,873	28,574	68,447	139.5	23.22
Hsuanp'ing ..	50,000	26,000	76,000	192.3	27.39
Chingning ..	66,154	50,123	116,277	131.9	18.90
Total ...	11,444,457	9,280,016	20,724,589	122.3	67.00

The density of population in each district naturally corresponds to some extent to its area. Generally speaking, however, the districts in the lower Chientang valley and along the coast are more densely populated than the mountainous regions in the interior. Another interesting fact about the population of the Province is that the number of males exceeds that of females by 23.3 per cent. Among all the districts of the Province only two, Ninghsien and Lishui, have a larger female population, while in Hsuanp'ing and Fenshui the male population exceeds the female by about 90 and 80 per cent. Generally, the difference is smaller in the coastal districts than in the interior. The explanation of this is probably that men, having greater productive ability, have a better chance in the struggle of life, and for the same reason, usually receive better from poor parents during their childhood.

CHAPTER IV

TOPOGRAPHY

MOUNTAIN RANGES

THE MOUNTAINS in Chekiang Province are all extensions from Hsienhsialing (仙霞嶺), a branch of the Nanling (南嶺) range, which traverses the center of the Province, with two branches, the Fengling (楓嶺) and the Huaiyüling (懷玉嶺) extending over the northern and southern part of the Province respectively.

The Hsienhsialing enters the Province from Fukien, its principal peaks being in the south of Kiangshan. It then runs northeast and separates into three branches at Tap'enshan (大盆山). The centre one is called the T'ient'ai Range (天台山), the main peak being situated in the district of T'ient'ai. The southern branch, called the Kuichi Range (會稽山) lies between Ts'ao-ê (曹娥) and P'uyang (浦陽) rivers. The Kuats'ang Range (括蒼山脈), the southern branch, is several hundred *li* in length, and has 102 peaks, some of which are considered to provide the most beautiful scenery in the Province.

The Huaiyüling Range extends along the boundary between Chekiang and Kiangsi, its principal peaks being in the district of Yüshan (玉山), Kiangsi. The section in Anhui is called the Huangshan (黃山) Range, while the part which extends into Chekiang from Anhui is called the T'ienmushan (天目山) Range.

The Fengling Range lies between Chekiang and Fukien, its main peak being west of Lungchuan, and the range ends in the district of T'aishun.

STREAMS AND LAKES

1. **Chientang River.**—This river, formerly called Chekiang, is the largest in the Province. It flows into the Hangchow Bay and is fed by three tributaries. The eastern one is called Tungyangkiang (東陽江), flowing from Tap'enshan. The southern is called Lankiang (蘭江),

which joins the Tungyangkiang at Lanchi, and the western one starts from Anhui and joins the other two at Chienteh.

2. **Ts'ao-ê Kiang.**—This stream rises in the Kuichi and T'ient'ai mountains. The upper portion is called Yenchi (剡 溪), while the lower portion derives its name from the village, town of Ts'ao-ê, which it passes through and empties into the sea at Sankiang (三 江).

3. **Yungkiang** (甬 江)—is formed by the junction of the Fenghuakiang (奉 化 江) from the south and the Yüyaokiang (餘 姚 江) from the north, both having their sources in the Ssuming Mountains (四 明 山). It runs through Ninghsien and enters the sea at Chenhai.

4. **Lingkiang** (甯 江).—This river is fed by two creeks, Shihfeng (始 豐) and Yungan (永 安), which unite at Linhai. From Linhai it runs south-east through Haimencheng (海 門 城) and empties into the T'aichow Bay (台 州 灣).

5. **Oukiang** (甌 江).—This is the second largest river in the Province, with branches traversing many southern districts. It is formed by the union of two rivers, the Tachi (大 溪) and Hsiaochi (小 溪), at T'singt'ien. From Ts'ingt'ien it runs eastward through Yungchia to the sea.

6. **The Grand Canal.**—The section in Chekiang runs from Hangchow eastward to Shaohsing, and then turns north into Kiangsu.

The largest lake in the Province is Taihu, which lies between Chekiang and Kiangsu. There are more than a dozen islands in the lake, East and West Tungt'ing (洞 庭) and Machishan (馬 跡 山) being the three largest.

COMMUNICATIONS

There are many navigable inlets on the coast of Chekiang, that at Ningpo being the most important. Steamship services between Ningpo and Shanghai run daily, while ships from Ningpo bound for various ports between Shanghai and Foochow sail at frequent intervals. Six steam-launch lines, from Ningpo to Lungshan (龍山), Haimen (海 門), Chinchingkang (金 婧 港), T'aichow,

Wenchow and Juian, touching such places as Tinghai, Shenchiamen (沈家門), Putu (普陀), Taishan (岱山), Likang (澥港), Hsiangshan, Ship'u (石浦), Ch'uanshan (穿山), Chint'ang (金塘), Ninghai, etc., are operated by several companies.

The whole length of the Grand Canal in Chekiang is navigable by steam launches and sailing boats, a number of which ply regularly between Hangchow, Wuhsing, Chiahsing, and Shaohsing. The section of Chientang river below Tunch'i (屯溪) in Anhui is navigable by light sailing boat, while the portion below Lanch'i is crowded with all kinds of vessels. Regular steam-launch services between Tunglu and Hangchow are maintained throughout the year. On the Yungkiang steam-launches can move freely between Ninghsien and Fenghua and the section of Yüyaokiang between Ninghsien and Yüyao is also navigable by launches. Sail-boats can sail as far up-stream as Pokuan (百官). The Lingkiang is navigable by sailing-boats east of T'ient'ai, the section between T'aichow and Huangyen being navigable by launches. Sail-boats can be used on the Oukiang east of Lungchuan, but owing to the large number of shoals cannot move freely until east of Lishui. The section near the mouth of the river, however, is navigable by steam-launches.

In regard to communications by land, the Shanghai-Hangchow-Ningpo railway connects Hangchow with Shanghai, Ninghsien and Pokuan. The newly-built Hangchow-Kiangshan line links Hangchow and Kiangshan, passing through Hsiaoshan, Iwu, Chinhua, Lanch'i, T'angch'i, Lungyu, Ch'ühsien, and Kiangshan.

Provincial highways between Hangchow and Yühang, Yühang and Linan, Hangchow and Fuyang, Hangchow and Haiyen, Shaohsing and Hsiaoshan, Shaohsing and Ts'ao-ê, Chühsien and Lanch'i, Chühsien and Ch'angshan, Chühsien and Kiangshan and Ch'angshan and Yüshan. Kiangsi, have been completed, while the recently-built motor-roads between Hangchow and Shanghai, Hangchow and Nanking, and Soochow and Chiahsing add to the convenience of travellers in the north-western part of the Province. The south-eastern part of Chekiang, however, has few communication facilities, as the region is mostly mountainous,

CHAPTER V

CLIMATE AND SOIL

THE CLIMATE of Chekiang Province is characterized by uniformly mild, moist weather, free from sudden changes and extremes of heat and cold. Owing to the Hsienhsialing Range, which divides the Province into two parts, the climate of the southern section, being somewhat sub-tropical in nature, is different from that of the northern part. In the following table the average monthly temperature and rainfall of three representative districts, namely, Yungchia, Hanghsien and Ninghsien, are shown:—

		Jan.	Feb.	Mar.	April	May	June
Temperature (Centigrade)	Yungchia	8.3	8.4	11.5	16.3	20.8	24.9
	Ninghsien	5.4	5.4	9.2	14.8	24.0	24.0
	Hanghsien	4.7	5.4	9.1	15.0	24.5	24.5

		Jan.	Feb.	Mar.	April	May	June
Temperature (Centigrade)	Yungchia	28.1	28.2	25.5	20.9	15.8	10.8
	Ninghsien	27.8	28.0	24.3	19.2	13.3	7.7
	Hanghsien	28.3	27.9	23.2	18.2	11.8	6.0

		July	Aug.	Sept.	Oct.	Nov.	Dec.
Rainfall (Millimeters)	Yungchia	44	94	123	153	180	265
	Ninghsien	68	88	110	118	112	190
	Hanghsien	62	85	137	146	111	249

		July	Aug.	Sept.	Oct.	Nov.	Dec.
Rainfall (Millimeters)	Yungchia	199	235	204	94	57	40
	Ninghsien	126	176	177	109	63	48
	Hanghsien	152	176	135	107	82	60

The soil of the Province is on the whole rich and productive, but owing to different geological formations differs considerably in various districts, as shown by the following table, which gives the percentage of clay and sandy soils and clay loams in the cultivated areas of each district:—

	Clay Loams	Sandy Soils	Clay
Municipality of Hangchow	40	30	30
Hanghsien	60	30	10
Haining	40	20	40
Fuyang	80	15	5
Yühang	30	50	20
Linan	30	40	30
Yüch'ien	30	70	—
Hsinteng	15	72	13
Ch'anghua	60	25	15
Chiahsing	20	10	70
Chiashan	—	—	100
Haiyen	65	25	10
Ts'ungteh	30	20	50
P'inghu	25	50	25
T'unghsiang	70	—	30
Wuhsing	94.5	5	0.5
Ch'anghsing	50	40	10
Tehts'ing	65	10	25
Wuk'ang	25	40	35
Anchi	38	25	27
Hsiaofeng	5	90	5
Ninghsien	70	30	—
Ts'uch'i	70	15	15
T'ient'ai	30	50	20
Hsienchü	10	80	10
Chinhua	20	50	30
Lanch'i	15	40	45
Tungyang	7	85	8
Iwu	15	50	35
Yungk'ang	60	15	25
Wui	50	30	20
P'ukiang	35	60	5
T'angch'i	5	45	40
Ch'ihsien	30	15	55
Lungyu	20	10	70
Kiangshan	20	10	70
Ch'angshan	45	15	40
K'aihua	60	25	15
Chienteh	40	40	20
Fenghua	10	60	30
Chenhai	40	20	40
Tinghai	20	80	—
Hsiangshan	70	20	10
Nant'ien	40	50	10
Shaohsing	15	25	60
Hsiaoshan	4	51	45
Chuchi	60	20	20

	Clay Loams	Sandy Soils	Clay
Yüyao	60	20	20
Shangyü	30	40	30
Chenghsien	20	50	30
Hsinch'ang	30	50	20
Linhai	30	50	20
Huangyen	2	8	90
Ninghai	30	50	20
Wenling	20	20	60
Shunan	70	25	5
T'unglu	27	48	25
Shuian	60	15	25
Shouch'ang	70	15	15
Fenshui	30	40	30
Yungchia	40	20	40
Jüian	25	45	30
Lots'ing	10	35	45
P'ingyang	30	5	65
T'aishun	50	20	30
Yühuan	70	30	—
Lishui	25	60	15
Ts'ingt'ien	3	97	—
Chinyun	30	65	50
Sungyang	30	50	20
Shuich'ang	60	15	25
Lungch'uan	40	35	25
Ch'ingyuan	20	65	15
Yunho	15	50	35
Hsuanp'ing	40	35	25
Chingning	18	45	37

BOOK TWO

ECONOMIC CONDITIONS

CHAPTER I

AGRICULTURAL AFFAIRS

AREA OF CULTIVATED LAND

OWING to the dearth of statistical data no accurate figures regarding the area of cultivated land in the Province are available. There are only two comparatively reliable sources from which a rough idea of the cultivated area can be obtained, namely, the Provincial Land-Tax Record of 1932, and the Agricultural Report of Chekiang, issued in 1929 by the Statistical Bureau of the Legislative Yuan (published in the *Statistical Monthly*, Vol. II, No. 8). The Land-Tax Record classifies cultivated land into *t'ien* (田) low land, *ti* (地) high land, *shan* (山) hilly land, and *tang* (塘) fields around lakes. The cultivated area of the 75 *hsien* in the Province, according to the Record, was estimated at 47,690,893 *mou*, of which 52.7 per cent is in the *t'ien* group, 12.9 per cent in the *ti* group, 31.9 per cent in the *shan* group, and 2.5 per cent in the *tang* group. As to the distribution of cultivated land among various *hsien*, Shaohsing possesses the largest area, covering 2,255,611 *mou*, while Taishun has the smallest, with 72,584 *mou*. Wuhsing has the largest area of *tien* land, 1,170,852 *mou*, Fenshui the smallest, with 33,244 *mou*; Hsiaoshan headed the list with *ti* land, covering 354,817 *mou*; and Chingyun has the largest area of *shan* land, with 5,509,137 *mou*. Wuhsing also has the largest area of *tang* land, 85,378 *mou*. Detailed figures for each *hsien*, as given in the Provincial Land Tax Record, are as follows:—

	Low Land (mou)	High Land (mou)	Hilly Land (mou)	Fields Around Lakes (mou)	Total (mou)	Barren Land (mou)
Hangchow Municipality	6,222	38,707	8,165	26,808	79,902	28,816
Hanghsien	614,679	284,966	179,585	78,151	1,157,381	39,325
Haining	624,067	191,861	14,996	23,102	854,026	—
Fuyang	117,021	133,153	342,739	5,761	598,674	4,362
Yühang	193,928	60,308	247,849	11,939	514,024	140,000
Linan	122,587	26,466	61,234	2,517	212,804	—
Yüch'ien	94,728	23,186	49,907	477	168,298	39,920
Hsinteng	52,599	37,747	34,852	1,231	126,429	—
Ch'anghua	34,255	20,836	21,648	2,286	79,025	223
Chiahsing	1,133,862	150,733	70	28,851	1,313,516	70
Chiashan	519,032	—	—	10,055	529,087	—
Haiyen	561,312	—	10,988	12,074	584,374	61,700
Ts'ungteh	293,924	205,985	—	2,653	502,562	—
P'inghu	416,877	72,417	—	7,026	496,320	38,882
T'unghsiang	515,725	—	315	1,313	517,353	—
Wuhsing	1,170,852	155,634	164,303	85,378	1,576,167	—
Ch'anghsing	515,839	89,407	149,925	12,599	767,770	100,000
Tehts'ing	276,701	79,854	33,367	55,034	544,956	—
Wuk'ang	114,518	35,659	254,367	20,686	425,230	—
Anchi	163,769	37,839	112,926	1,295	315,829	—

	Low Land (mou)	High Land (mou)	Hilly Land (mou)	Fields Around Lakes (mou)	Total (mou)	Barren Land (mou)
Hsiaofeng	122,288	49,655	449,015	907	621,865	—
Ninghsien	802,097	62,202	15,278	3,813	883,390	10,000
Ts'uch'i	472,993	56,493	313,821	229	843,536	—
Fenghua	386,402	96,713	642,202	16,242	1,141,559	—
Chenhai	403,089	54,614	66,047	17,412	541,162	17,410
Tinghai	194,471	80,418	55,410	79,376	409,675	—
Hsiangshan	178,712	40,703	10,162	29,886	259,463	20,749
Nant'ien	41,600	18,969	15,096	—	75,665	54,185
Shaohsing	1,075,489	97,989	1,003,594	78,539	2,255,611	—
Hsiaoshan	354,602	354,817	116,841	18,159	844,419	945,848
Chuchi	817,144	152,021	163,697	3,819	1,136,681	96,400
Yüyao	610,894	92,572	190,358	856	894,680	47,573
Shangyü	453,090	106,046	494,972	3,517	1,057,625	—
Ch'enghsien	439,722	146,126	133,759	7,492	727,099	—
Hsinch'ang	201,206	57,390	57,180	—	315,776	—
Linhai	436,499	133,454	169,313	3,077	742,343	—
Huangyen	551,520	115,673	—	18,211	685,404	8,725
Ninghai	400,332	128,795	275,835	104	805,066	—
Wenling	442,850	156,262	20,864	10,777	630,753	3,432
T'ient'ai	238,628	83,569	63,368	7,253	392,818	4,412

	Low Land (mou)	High Land (mou)	Hilly Land (mou)	Fields Around Lakes (mou)	Total (mou)	Barren Land (mou)
Hsienchü	213,450	53,359	33,412	4,766	304,987	11,000
Chinhua	585,125	150,891	619,975	61,869	1,417,860	—
Lanch'i	451,860	114,108	401,823	43,037	1,010,828	52,330
Tungyang	463,923	167,950	345,763	55,616	1,033,252	—
Iwu	463,587	181,484	206,571	64,955	916,597	—
Yungk'ang	422,358	60,961	140,166	45,695	669,180	—
Wui	238,471	2,740	31,589	342	273,142	315,892
P'ukiang	281,833	95,171	428,804	14,443	820,251	—
T'angch'i	230,716	70,621	100,843	8,920	411,100	—
Ch'ühsien	485,195	208,840	125,633	22,818	842,486	—
Lungyu	369,987	50,325	27,587	7,406	455,305	—
Kiangshan	337,835	60,489	306,710	10,690	715,724	—
Oh'angshan	166,251	91,706	53,488	4,318	315,763	—
K'aihua	178,341	100,840	46,836	725	326,742	—
Chienteh	143,054	73,122	306,206	4,006	526,388	—
Shunan	196,453	167,938	25,019	1,880	391,290	—
T'unglu	147,314	67,795	183,413	5,183	403,705	720
Shuian	163,270	116,959	87,137	4,873	372,239	—
Shouch'ang	111,368	43,256	34,682	15,661	213,967	—
Fenshui	33,244	39,172	48,593	777	121,786	200

	Low Land (mou)	High Land (mou)	Hilly Land (mou)	Fields Around Lakes (mou)	Total (mou)	Barren Land (mou)
Yungchia	639,425	88,848	31,625	—	759,898	—
Juian	324,221	140,426	18,289	—	482,936	—
Lots'ing	352,082	62,897	4,805	81,988	501,772	—
P'ingyang	508,940	494	19,267	—	528,701	—
T'aishun	70,207	1,693	684	—	72,584	—
Yühuan	88,134	103,521	3,652	133	195,440	—
Lishui	183,609	2,829	—	—	186,438	500,000
Ts'ingt'ien	142,515	—	—	—	142,515	—
Chinyun	81,021	90,268	5,509,137	4,550	5,674,976	—
Sungyang	162,828	—	78,657	—	241,485	3,172
Shuich'ang	157,584	6,097	—	123	163,804	—
Lungch'uan	165,781	2,920	13,388	323	182,412	7,253
Ch'ingyuan	109,345	471	20,006	101	129,923	—
Yunho	69,281	3,675	81	25	73,062	985
Hsuanp'ing	74,496	964	—	72	75,532	714,420
Chingning	83,670	2,213	22,509	114	108,506	100,000
TOTAL	25,162,899	6,144,282	15,229,398	1,154,314	47,690,893	3,368,004

By way of comparison, the figures published by the Statistical Monthly are given as follows:—

	Total (mou)	Low Land (mou)	High Land (mou)	Hilly Land (mou)	Uncultivated Unarable Land (mou)
Hanghsien	1,206,241	844,369	241,248	120,624	17,478
Haining	899,084	710,276	188,808	——	52,415
Fuyang	407,153	203,577	134,360	69,216	483
Yühang	459,532	344,649	68,930	45,953	——
Linan	233,816	161,333	23,382	49,101	10,000
Yüch'ien	169,016	94,648	23,663	50,705	240
Hsinteng	99,898	62,936	21,976	14,986	——
Ch'anghua	125,277	93,958	18,792	12,527	5,000
Chiahsing	1,629,152	1,303,322	325,830	——	80,510
Chiashan	673,369	572,364	101,005	——	——
Haiyen	802,966	521,928	208,771	72,267	10,000
Ts'ungteh	602,630	355,552	247,078	——	56,895
P'inghu	795,946	787,987	——	7,959	——
T'unghsiang	597,230	364,310	226,948	5,972	——
Wuhsing	2,088,684	1,712,720	187,982	187,982	——
Ch'anghsing	1,343,496	1,021,057	188,089	134,350	——
Tehts'ing	548,631	356,611	186,534	5,486	3,000
Wuk'ang	234,356	65,621	21,092	147,644	——
Anchi	511,911	445,363	35,834	30,714	2,500
Hsiaofeng	308,875	219,301	61,775	27,799	——
Ninghsien	1,101,862	936,583	77,130	88,148	57,071
Ts'uch'i	799,185	719,267	55,942	23,976	500
Fenghua	519,471	436,356	31,168	51,947	——
Chenhai	645,829	548,955	51,666	45,208	28,245
Tinghai	379,613	303,690	49,352	26,571	——
Hsiangshan	385,553	269,887	77,111	38,555	5,000
Nant'ien	66,959	41,515	18,748	6,696	2,118
Shaohsing	1,422,335	611,604	426,701	384,030	——
Hsiaoshan	1,096,185	559,054	482,322	54,809	100,000
Chuchi	985,484	581,436	295,645	108,403	964,000
Yüyan	1,375,896	687,948	343,974	343,974	49,325
Shanyü	611,810	263,078	61,181	287,551	——
Ch'enghsien	639,349	466,725	159,837	12,787	6,877
Hsinchang	271,075	211,438	37,951	21,686	——
Linhai	1,111,316	989,071	66,679	55,566	6,350
Huangyen	923,384	757,175	147,741	18,468	——
Ninghai	709,928	589,240	78,092	42,596	200
Wenling	718,737	567,802	100,623	50,312	——
T'ient'ai	328,854	230,198	59,194	39,462	——
Hsienchü	456,832	324,350	82,230	50,252	11,000
Chinhua	934,724	747,779	130,862	56,083	——
Lanch'i	594,530	475,624	107,015	11,891	——
Tungyang	632,869	354,407	113,916	164,546	50,737
Iwu	571,310	285,655	114,262	171,393	——
Yungk'ang	363,953	247,488	36,395	80,070	——
Wui	339,654	254,741	16,983	67,930	——

	Total (mou)	Low Land (mou)	High Land (mou)	Hilly Laud (mou)	Uncul.ivated Unarable Land (mou)
P'ukiang	389,975	211,682	52,196	26,097	——
T'angch'i	394,193	236,516	118,258	39,419	——
Ch'ühsien	936,884	843,196	37,475	56,213	——
Lungyu	504,351	403,480	95,827	5,004	500
Kiangshan	534,051	427,240	101,470	5,341	762
Ch'angshan	315,895	202,173	12,636	101,086	406
K'aihua	297,699	160,757	80,379	56,563	2,000
Chienteh	188,457	84,808	56,537	47,114	——
Shunan	319,134	188,289	51,061	79,784	25,000
T'unglu	214,366	115,758	53,592	45,016	450
Shuian	314,434	169,794	119,485	25,155	3,700
Shouch'ang	144,178	121,110	7,209	15,859	387
Fenshui	107,458	58,027	32,238	17,193	——
Yungchia	823,497	559,978	238,814	24,705	83,000
Juian	733,857	653,133	44,031	36,693	——
Lots'ing	549,170	455,811	87,867	5,492	50,000
P'ingyang	899,637	746,699	107,956	44,982	1,300
Taishun	75,899	72,104	2,277	1,518	——
Yühuan	138,778	134,615	1,388	2,775	——
Lishui	218,699	144,342	30,618	43,739	20,000
Ts'ingt'ien	186,752	130,726	29,881	26,145	160,660
Chinyun	194,939	179,344	9,747	5,848	——
Sungyang	242,996	162,807	68,039	12,150	——
Shuichang	188,997	171,987	7,561	9,449	3,872
Lungch'uan	245,934	164,776	29,512	51,646	4,000
Ch'ingyuan	112,882	94,820	1,129	16,933	12,041
Yunho	108,777	52,213	51,125	5,439	——
Hsuanp'ing	84,778	65,279	5,087	14,412	——
Chingning	117,941	91,993	12,974	12,974	——
Total	41,208,568	29,806,402	7,281,186	4,120,960	1,784,022
Average area for each farming family.	13.02	9.42	2.30	1.30	0.56

DISTRIBUTION OF FARM LAND

The average holding of farm land by each family is about 12.4 *mou*. This figure seems very small, but most of the cultivated land yields two crops a year, and if the average yield be taken at 1.5 crop, the average holding can be taken as equivalent to 18.5 *mou*.

The distribution of cultivated land in various *hsien* is by no means uniform. In some places it is not unusual for one family to hold 100 *mou*, while in others a family owns only about four *mou*. The average holding is between

10 to 20 *mou*, distributed as follows:—

Average family holding of cultivated land	No. of Hsien
Under 10 *mou*	21
11–20 „	36
21–30 „	7
31–40 „	6
41–50 „	1
51–100 „	2
Over 101 „	3
Total	76

Detailed figures for each *hsien* are as follows:—

	Area of Cultivated Land (*mou*)	No. of Rural Families	Average Family Holding (*mou*)
Municipality of Hangchow	79,902	17,023	4.6
Hanghsien	1,157,381	66,262	17.4
Haining	854,026	60,000	14.2
Fuyang	598,674	40,400	14.8
Yühang	514,024	28,000	18.3
Linan	212,804	14,110	15.0
Yüch'ien	168,298	54,343	30.9
Hsinteng	126,429	9,929	12.7
Tehts'ing	544,956	37,636	14.4
Wuk'ang	425,230	13,102	32.4
Anchi	315,829	18,252	17.3
Hsiaofeng	621,865	45,283	13.7
Ninghsien	883,390	78,240	11.2
Ts'uch'i	843,536	45,400	18.5
Fenghua	1,141,559	38,000	30.0
Chenhai	541,162	22,300	24.2
Tinghai	409,675	3,480	117.0
Ch'angshan	259,463	12,203	21.2
Nant'ien	75,665	3,884	19.4
Shaohsing	2,255,611	239,506	9.4
Hsiaoshan	844,419	53,705	15.7
Chuchi	1,136,681	91,780	12.3
Yüyao	894,680	133,265	6.7
Shangyü	1,057,625	55,880	18.9
Ch'anghua	79,025	14,700	53.7
Chiahsing	1,313,516	73,800	17.7
Chiashan	529,087	35,200	15.0
Haiyen	584,374	41,127	14.2
Ts'ungteh	502,562	37,514	13.4
P'inghu	496,320	53,152	9.3
T'unghsiang	517,353	42,507	12.1

	Area of Cultivated Land (*mou*)	No. of Rural Families	Average Family Holding (*mou*)
Wuhsing	1,576,167	585,114	26.6
Ch'anghsing	767,770	40,000	19.1
Ch'enghsien	727,099	63,202	11.5
Hsinch'ang	315,776	40,458	7.8
Linhai	742,343	56,435	13.1
Huangyen	685,404	90,000	7.6
Ninghai	805,066	80,000	10.0
Wenling	630,753	100,000	6.3
T'ient'ai	392,818	74,533	5.2
Hsienchü	304,987	31,044	9.8
Chinhua	1,417,860	41,620	33.8
Lanch'i	1,010,828	51,801	19.5
Tungyang	1,033,252	10,000	133.2
Iwu	916,597	24,682	37.1
Yungk'ang	669,180	49,200	13.6
Wui	273,142	4,706	58.0
P'ukiang	820,251	32,870	24.9
T'angch'i	411,100	9,756	42.1
Ch'ühsien	842,486	45,572	18.4
Lungyu	455,305	30,000	15.1
Kiangshan	715,734	39,825	17.9
Ch'angshan	315,763	23,000	13.7
K'aihua	326,742	25,000	13.1
Chienteh	526,388	19,600	26.8
Shunan	391,290	38,000	10.2
Tunglu	403,705	17,723	22.8
Shuian	372,239	23,584	15.7
Shouch'ang	213,967	11,816	18.1
Fenshui	121,786	3,080	39.5
Yungchia	759,898	120,000	6.3
Juian	482,936	91,980	5.2
Lots'ing	501,772	60,000	8.3
P'ingyang	528,701	131,264	4.0
Taishun	72,584	25,000	2.9
Yühuan	195,440	29,300	6.6
Lishui	186,438	25,000	7.4
Ts'ingt'ien	142,215	13,148	10.8
Chinyun	5,674,976	45,000	126.1
Sungyang	241,485	21,346	11.3
Shuich'ang	163,804	20,847	7.8
Lungch'uan	184,412	57,148	31.9
Ch'ingyuan	129,923	18,580	6.9
Yunho	73,062	12,310	5.9
Hsuanp'ing	75,532	16,465	4.5
Chingning	108,506	22,500	4.8
Total	47,690,893	3,852,492	12.4

LAND VALUES

The value of cultivated land in the Province varies widely. According to investigations made in 1933, low land fetches the highest price, with high land next, and hilly land third. All land is further classified into first, second and third grades. A *mou* of first grade low land is worth about $104, second grade, $68, and third grade, $37; the price of a *mou* of first grade hilly land may be had for $37.40, second grade, $21.40, and third grade, $9.30. Detailed prices (per *mou*) for various grades of land in different *hsien* are as follows:—

	Low Land			High Land			Hilly Land		
	First Grade	Second Grade	Third Grade	First Grade	Second Grade	Third Grade	First Grade	Second Grade	Third Grade
Municipality of Hangchow	$300	$165	$30	$120	$75	$40	$60	$30	$10
Hanghsien	80	50	30	70	40	20	30	20	5
Haining	60	40	20	50	30	10	15	10	5
Fuyang	200	70	10	80	40	10	150	80	1
Yühang	100	40	25	60	5	5	40	20	10
Linan	80	50	30	10	20	10	10	6	3
Yüch'ien	80	50	30	20	10	8	8	5	3
Hsinteng	80	55	45	40	36	19	8	4	2
Ch'anghua	200	120	20	150	70	4	20	12	3
Chiahsing	30	20	10	—	—	—	15	10	8
Chiashan	50	40	30	40	30	25	—	—	—

	Low Land			High Land			Hilly Land		
	First Grade	Second Grade	Third Grade	First Grade	Second Grade	Third Grade	First Grade	Second Grade	Third Grade
Haiyen	90	25	10	25	15	10	200	35	10
Ts'ungteh	60	40	20	50	30	15	—	—	—
P'inghu	60	35	20	40	30	10	30	25	10
T'unghsiang	60	40	20	45	40	30	—	—	—
Wuhsing	50	45	10	40	30	20	100	40	5
Ch'anghsing	80	60	40	50	35	20	45	20	10
Tehts'ing	100	45	10	300	100	20	20	10	3
Wuk'ang	30	20	15	100	80	50	50	30	10
Anchi	120	90	70	60	50	40	70	50	20
Hsiaofeng	100	50	20	40	30	15	20	15	5
Ninghsien	150	80	40	100	70	40	70	50	10
Ts'uch'i	60	40	30	45	30	20	30	20	15
Fenghua	150	100	50	50	40	30	35	15	5
Chenhai	80	70	60	50	40	30	45	40	35
Tinghai	250	160	90	100	70	40	80	50	30
Hsiangshan	100	80	50	90	70	40	40	30	10
Nant'ien	70	45	20	35	25	15	25	15	6
Shaohsing	90	65	50	30	25	17	10	8	6
Hsiaoshan	150	100	50	147	100	50	25	15	5
Chuchi	100	70	20	20	15	10	5	3	1
Yüyao	80	60	40	75	50	25	40	30	20

	Low Land			High Land			Hilly Land		
	First Grade	Second Grade	Third Grade	First Grade	Second Grade	Third Grade	First Grade	Second Grade	Third Grade
Shangyü	300	150	25	150	70	20	20	10	2
Ch'enghsien	120	100	82	120	100	80	100	60	30
Hsinch'ang	130	100	80	120	100	80	100	80	50
Linhai	80	60	40	40	30	15	20	15	10
Huangyen	80	60	40	50	40	30	20	15	8
Ninghai	40	30	15	80	50	20	5	3.5	2
Wenling	100	70	50	70	40	25	20	10	5
T'ient'ai	50	40	30	40	35	25	30	25	20
Hsienchü	100	80	60	90	60	40	60	40	30
Chinhua	100	60	20	40	20	8	10	3	0.5
Lanch'i	80	70	60	60	50	30	25	15	5
Tungyang	300	130	60	100	60	30	50	28	8
Iwu	60	40	20	40	20	10	10	5	2
Yungk'ang	150	100	50	50	30	10	5	3	1
Wui	100	50	10	40	20	5	20	10	1
P'ukiang	140	100	60	15	12	5	8	4	1
T'angch'i	120	80	40	—	—	—	30	20	10
Ch'ühsien	100	50	20	100	70	30	100	50	10
Lungyu	50	25	12	40	20	10	100	20	5
Kiangshan	80	50	30	30	20	10	25	15	8
Ch'angshan	70	40	25	40	20	10	30	10	5
K'aihua	45	30	15	20	14	8	10	5	1

	Low Land			High Land			Hilly Land		
	First Grade	Second Grade	Third Grade	First Grade	Second Grade	Third Grade	First Grade	Second Grade	Third Grade
Chienteh	90	60	30	40	20	3	20	8	1
Shunan	80	50	20	60	30	15	20	10	5
T'unglu	120	80	60	60	50	30	30	20	10
Shuian	100	80	40	50	40	20	30	20	10
Shouch'ang	100	80	50	30	25	10	20	13	6
Fenshui	60	50	40	40	30	15	15	10	5
Yungchia	120	90	60	100	70	30	60	30	15
Juian	60	40	20	30	20	10	20	10	5
Lots'ing	120	80	40	50	30	20	20	10	6
P'ingyang	80	60	40	40	30	20	20	10	5
T'aishun	100	70	40	40	20	10	10	30	0.5
Yühuan	100	70	40	40	25	10	20	10	4
Lishui	70	45	20	55	35	12	27	15	4
T'singt'ien	120	80	40	80	40	20	20	10	5
Chinyun	350	300	170	150	100	50	100	50	10
Sungyang	18	12	6	40	30	20	30	20	10
Shuich'ang	120	65	25	80	50	20	40	30	10
Lungch'uan	30	20	15	15	10	7	—	—	—
Ch'ingyuan	120	96	70	70	50	35	90	70	50
Yunho	70	60	50	60	50	40	30	20	10
Hsuanp'ing	120	80	40	60	40	20	8	5	2
Chingning	70	60	50	40	30	20	50	40	30
Average	104	68	37	63	40.6	21.8	37.4	21.4	9.2

CHAPTER II

THE TENANCY SYSTEM

TENANCY systems in the Province may be classified into three forms: (1) the *fen chu* (分租), (2) the *pao chu* (包租), and (3) the *yung t'ien* (永佃). The first is a system under which landlord and tenant are both entitled to a share in the crop. The ratio is fixed according to the amount of capital supplied to the tenant by the landlord; in some cases the harvest is equally divided, while in others a ratio of 40—60 or 30—70 is observed. Under the *pao chu* system those renting the land are not necessarily farmers, but may be middlemen who lease the land to the actual cultivators at a higher rent, and profit by the margin thus gained. The *yung t'ien* system is a semi-permanent tenancy, under which the property is divided into "surface" and "bottom" land. The tenant pays the landlord a certain sum, known as *t'ien yin* (佃銀), in exchange for rights over the "surface", while the landlord still owns the "bottom" of the land. The landlord cannot change a tenancy unless the tenant fails to pay his rent regularly, and even then, the landlord must refund the *t'ien yin* before he can effect the change. The tenant, on the other hand, can sub-let his holding to another farmer without the consent of the landlord, but the original tenant remains responsible for the rent due to the owner of the land.

Agreements between landlord and tenant are usually written, though in some cases verbal contracts are made. A written agreement must include the names of tenant and landlord, location and area of the farm, nature and quantity of the crop, provisions for paying rent during famine years, conditions for returning the land to the owner, amount of deposit, date, and signatures of the lessee. The agreement does not fix the period of tenancy which, according to custom, is usually indefinite in the case of low land, and from three to ten years in the case of high land. Generally, a landlord must give one year's notice before he can displace a tenant.

MODE OF PAYING RENT

The maximum limit for rent paid to landlord is fixed at 50 per cent of the total receipts from the crop harvested, but the actual amount paid is usually less than 25 per cent of that amount. By-products of the farm, however, are the exclusive property of the tenant. Rent is paid in cash or in kind, which latter is again further classified as paddy and rice. Payment in terms of cash must be made in advance of tilling the soil, and the term is usually fixed at one year. In districts formerly under the jurisdiction of Chinhua, Ch'üchow and Yenchow prefectures, payment in terms of paddy is preferred. The paddy is paid in units of piculs, and the amount is fixed according to the fertility of the field. Payment made in terms of rice is in units of *shih* (石), which is generally about 150 catties. It is not unusual that a tenant due to pay rent in rice and paddy settles his obligations in cash at current market quotations. There is a fourth method whereby a landlord supplies his tenant with the entire amount of capital needed, while in return the tenant pays the landlord 80 per cent of the crop harvested.

When rent is to be paid in cash, the process simply consists of handing over the money to the landlord or his agent. But if payment is made in kind, the produce is either delivered by the tenant to the landlord's godown or home, or is collected from the tenant by the landlord. In the former case, the tenant may receive a certain remuneration to cover the expense involved, while in the latter case the tenant has to deliver more produce to compensate the landlord for transportation expenses.

According to the second issue of the Labor Year Book (Chinese) the rent per *mou* paid by Chekiang tenants is as follows:—

	IN CASH			IN KIND		
	Grade "A" %	Grade "B" %	Grade "C" %	Grade "A" %	Grade "B" %	Grade "C" %
Low Land	9.3	9.2	11.5	48.2	49.2	50.6
High Land	11.1	10.9	10.2	49.0	45.0	43.6

According to investigations made by Mr. Han Teh-chang (韓德章), published in the *Social Science Magazine* (Chinese), Vol. IV, No. 1, the rent per *mou* paid by tenants in Western Chekiang is as follows:—

	IN CASH			IN KIND		
	Grade "A"	Grade "B"	Grade "C"	Grade "A" (catties)	Grade "B" (catties)	Grade "C" (catties)
Rent	$8.06	$6.00	$4.31	217.3	166.8	130.40
Percentage	8.80	9.10	11.90	9.6	11.1	14.10

Particulars for each *hsien* are tabulated as follows:—

	HOW PAID (CASH OR KIND)	AMOUNT PAID	REMARKS
Hanghsien	Both	75% of half the crop	By-products to be retained by tenants.
Yühang	In kind	ditto	—
Linan	Mostly in kind	$2-$5 or 50% of the crop	—
Yüch'ien	Both	According to agreement	—
Chiahsing	Both	75% of half the crop	—
Chiashan	In kind	4.5-7.5 *tou* of rice per *mou*	—
P'inghu	In kind	6-8 *tou* of rice per *mou*	*Yung tien* is adopted
Wuhsing	In kind	6 *tou* of rice per *mou*	Plus $3 per *mou* as rent
Ninghsien	In kind	150 catties of paddy to the landlord, and 20-150 catties to the secondary landlord.	—
Ts'uch'i	Both	75% of half the crop	—
Chenhai	Both	According to the fertility of the land.	—
Tinghai	Both	ditto	—
Hsiangshan	Both	Partly according to the system of 75% of half the crop.	—
Nant'ien	50% in kind, 30% in cash, and 20% *fen chu* system	In kind: 150 catties per *mou;* in cash: $3-$4; and *fen chu*: 40% landlord & 60% tenant.	—

	HOW PAID (CASH OR KIND)	AMOUNT PAID	REMARKS
Shaohsing	In kind	75% of half the crop	The maximum rent is 220-300 catties of paddy per *mou*, or 1.2-1.5 *shih* of rice.
Hsiaoshan	In kind	1.2 *shih* per *mou*	Reduced in case of poor crop.
Chuchi	In cash	According to agreement	—
Shangyü	*Fen chu*	Either in the ratio of 50-50, 40-60, or 30-70.	—
Chenghsien	ditto	Either in the ratio of 40-60 or 30-70.	—
Hsienchü	*Fen chu* or *Pao chu*	*Fen chu*: either in ratio of 40-60 or 30-70.	—
Linhai	In kind	Grade "A" land: 3.6 *shih* per *mou;* grade "B": 3 *shih;* grade "C": 2 *shih.*	—
Huangyen	Both	According to the harvest	—
Ninghai	Both	According to agreement	—
Wenling	In kind	50% of the crop	Plus $6 per *mou* as rent.
T'ient'ai	*Fen chü* or in kind	In kind: 1.5 *shih* of rice per *mou*	—
Hsienchü	In kind	Wheat: 3 *tou* per *mou*, paddy: 180 catties.	—

	HOW PAID (CASH OR KIND)	AMOUNT PAID	REMARKS
Chinhua	In kind	2.5 *shih* per *mou*	—
Lanch'i	Both	According to agreement	—
Tungyang	*Fen chu* or in kind	*Fen chu*: either in ratio of 50-50 or 40-60; in kind: 150-170 catties of paddy per *mou*	—
Iwu	*Pao chu*	Average 2 piculs of paddy per *mou*	—
Yungk'ang	In kind	50 per cent of the crop	—
P'ukiang	In kind	100-300 catties of paddy per *mou*	—
T'angch'i	Both	According to agreement	—
Ch'ühsien	*Pao chu, fen chu or yung Kien*	According to agreement	—
Lungyu	In kind	200-500 catties of paddy per 2.5 *mou*	$3-$12 or 300 catties of beans, wheat and millet per 2.5 *mou* as rent.
Kiangshan	In kind	1.2 *shih* of rice per *mou*	—
Ch'angshan	In kind	240 catties of paddy per *mou*	Reduced in bad year.
K'aihua	In kind	80 catties of paddy per *mou*	ditto
Chienteh	In kind	1.8 piculs of paddy per *mou*	—
Shunan	*Fen chu*	Low land: 50-50; high land: 40-60.	Paid twice a year.

	HOW PAID (CASH OR KIND)	AMOUNT PAID	REMARKS
Shuian	In kind	47.5-180 catties of paddy per *mou*	Wheat, beans, and maize are paid as rent for land.
Shouch'ang	In kind	120 catties of paddy per *mou*	Plus $3 per *mou* as rent.
Yungchia	Both	75% of half the crop	—
Lots'ing	In kind	ditto	—
P'ingyang	In kind	ditto	—
T'aishun	In kind	250 catties of paddy per *mou*	Reduced in bad year.
Yühuan	Both	75% of half the crop	—
Lishui	In kind	According to agreement	—
T'singt'ien	*Yung tien*	ditto	—
Chinyun	In kind	200-320 catties of paddy per *mou*	—
Sungyang	In kind	According to agreement or 75% of half the crop	—
Shuich'ang	In kind	1-4 *shih* of rice per *mou*	—
Lungch'uan	Both	75% of half the crop	—
Chingyuan	In kind	200 catties of paddy per *mou*	Reduced in bad year.
Yunho	Both	75% of half the crop	—
Hsuanp'ing	Both	According to agreement	Hilly lands are exempt.
Chingning	Both	75% of half the crop	Reduced in bad year.

CHAPTER III

RURAL ECONOMY

ALTHOUGH Chekiang is important agriculturally, the economic conditions of the farmers are not very much better than those in other localities. Only a small portion of the farmers own their land, while the majority work as tenants or hired farm laborers. The methods of farming are old-fashioned, and machinery is very rarely used except in experimental stations. The standard of living of the farming population, though higher than that in the interior provinces, is still far from satisfactory. Agricultural credits are available from various kinds of financial institutions, but rural banking is still not very developed. Cooperative societies, however, are found everywhere, and have proved to be very helpful to the rural population.

DISTRIBUTION OF FARMING POPULATION

To facilitate the work of investigation, the farming population of Chekiang was classified in the following groups:—

1. Landowners who are also cultivators;
2. Owner-tenants or those cultivating leased land in addition to their own;
3. Tenants working on land rented from the owners;
4. Agricultural laborers or farm employees.

In Chekiang the farming population is composed of 35 per cent tenants, 23.6 per cent land-owners, and 7.8 per cent agricultural laborers. These figures show that only a small proportion of the agricultural community in Chekiang own the land on which they work. The following table shows the distribution of the farming population in Chekiang:—

	Landowners		Owner-tenants		Tenants		Agricultural Laborers		Total	
	Families	Percentage	Families	Percentage	Families	Percentage	Families	Percentage	Families	Percentage
Hangchow Municipality	4,156	24.4	2,212	12.9	9,665	56.7	989	6	17,022	100
Hanghsien ..	14,578	22	36,444	55	13,252	20	1,988	3	66 262	100
Haining	4,800	8	42,000	70	12,000	20	1,200	2	60,000	100
Fuyang	25,000	62	10,000	25	5,000	12	400	1	40,400	100
Yühang	3,000	10.7	5,000	17.8	20,000	71.5	——	—	28,000	100
Linan	2,822	20	4,233	30	5,644	40	1,411	10	14,110	100
Yüch'ien	10,460	19.2	16,330	30	17,866	32.8	9,687	18	54,343	100
Hsinteng ...	2,968	29.8	5,592	56.3	1,369	13.9	——	—	9,929	100
Ch'anghua ..	10,400	70	2,200	15	1,400	10	740	5	14,700	100
Chiahsing ..	15,600	21.1	32,000	43.3	25,000	33.8	1,200	1.8	73,800	100
Chiashan ..	——	—	——	—	——	—	——	—	35,200	—
Haiyen	8,225	20	12,338	30	20,564	50	——	—	41,127	100
Ts'ungteh ..	11,254	30	18,757	50	6,377	17	1,126	3	37,514	100
P'inghu	3,008	5.6	8,026	15.2	42,118	79.2	——	—	53,152	100
T'unghsiang .	8,502	20	21,252	50	8,502	20	4,251	10	42,507	100
Wuhsing	58,632	9.3	322,273	54.9	175,894	28.8	28,315	7	585,114	100
Ch'anghsing .	10,000	25	20,000	50	5,000	12.5	5,000	12.5	40,000	100
Tehts'ing	26,626	70	9,509	25	——	—	1,501	5	37,636	100
Wuk'ang	5,161	39.4	4,449	33.6	3,492	27	——	—	13,102	100
Anchi	4,381	24	6,023	33	5,658	31	2,190	12	18,252	100
Hsiaofeng ..	14,870	33	15,086	33	15,327	34	——	—	45,283	100

	Landowners		Owner-tenants		Tenants		Agricultural Laborers		Total	
	Families	Percentage	Families	Percentage	Families	Percentage	Families	Percentage	Families	Percentage
Ninghsien ..	7,840	10	23,500	30	46,900	60	——	—	78,240	100
Ts'uch'i	7,531	15.6	7,603	15.5	24,526	58.4	5,740	10.5	45,400	100
Fenghua	20,000	50	10,000	25	6,000	20	2,000	5	38,000	100
Chenhai	1,400	6.2	2,900	13	12,000	53.8	6,000	27	22,300	100
Tinghai	280	8.1	1,000	28.7	2,200	63.2	——	—	3,480	100
Hsiangshan .	2,120	17.4	1,829	14.9	1,226	10	7,028	57.7	12,203	100
Nant'ien	777	20	1,164	30	1,943	50	——	—	3,884	100
Shaohsing ..	23,951	10	71,851	30	119,753	50	23,951	10	239,506	100
Hsiaoshan ..	10,740	20	16,115	30	21,480	40	5,370	10	53,705	100
Chuchi	27,534	29.9	36,712	40.2	——	—	27,534	29.9	91,780	100
Yüyao	26,653	20	39,980	30	66,632	50	——	—	133,265	100
Shangyü	——	—	——	—	——	—	——	—	5,880	——
Ch'enghsien	9,495	15	22,055	35	25,322	40	6,330	10	63,202	100
Hsin'chang ..	16,184	40	12,137	30	12,137	30	——	—	40,458	100
Linhai	11,288	20	16,930	30	22,574	40	5,643	10	56,435	100
Huangyen ..	12,000	13.3	48,000	53.3	20,000	22.2	10,000	11.2	90,000	100
Ninghai	58,000	72.5	10,000	12.5	12,000	15	——	—	80,000	100
Wenling	15,000	15	20,000	20	60,000	60	5,000	5	100,000	100
T'ient'ai	52,636	70.2	11,854	15.9	9,224	12.8	819	1.1	74,533	100
Hsienchü	13,655	44	11,066	35.6	5,691	18.4	632	2	31,044	100
Chinhua	7,949	19.1	22,860	54.9	10,545	25.3	266	0.7	41,620	100
Lanch'i	7,625	14.7	881	1.7	41,895	80.9	1,400	2.7	51,801	100
Tungyang ..	11,000	10	11,000	10	82,500	75	5,500	5	110,000	100

	Landowners		Owner-tenants		Tenants		Agricultural Laborers		Total	
	Families	Percentage	Families	Percentage	Families	Percentage	Families	Percentage	Families	Percentage
Iwu	7,405	30	12,342	50	3,701	15	1,234	5	24,682	100
Yungk'ang ..	16,900	30	8,000	14	20,300	49	4,000	7	49,200	100
Wui	942	20	1,176	25	2,117	45	471	10	4,706	100
P'ukiang	6.574	20	19,722	60	4,931	15	1,643	5	32,870	100
T'angch'i	2,170	22	3,690	37	3,896	40	——	—	9,756	100
Ch'ühsien' ..	17,868	39.2	13,165	28.8	14,539	32	——	—	45,572	100
Lungyu	3,000	10	9,000	30	18,000	60	——	—	30,000	100
Kiangshan .	——	—	——	—	——	—	——	—	39,825	—
Ch'angshan .	14,000	60.8	4,500	19.5	3,500	15.1	1,000	4.6	23,000	100
K'aihua	——	—	——	—	——	—	——	—	25,000	—
Chienteh ...	11,760	60	1,960	10	3,920	20	1,960	10	19,600	100
Shunan	34,400	90.5	2,200	5.8	1,000	2.6	400	1.1	38,000	100
T'unglu	7,089	40	3,544	20	5,317	30	1,772	10	17,722	100
Shuian	——	—	——	—	——	—	——	—	23,584	—
Shouch'ang .	4,926	41.69	1,641	13.89	4,401	37.24	848	7.18	11,816	100
Fenshui	150	5	775	25	1,860	60	300	10	3,080	100
Yungchia ...	18,000	15	36,000	30	60,000	50	6,000	5	120,000	100
Juian	29,590	32	41,490	45	18,390	20	2,510	3	91,980	100
Lots'ing	23,000	38.3	——	—	37,000	61.7	——	—	60,000	100
P'ingyang ..	65,632	50	45,942	35	14,439	11	5,251	4	131,264	100
T'aishun	2,500	10	5,000	20	16,250	65	1,250	5	25,000	100
Yühuan	5,860	20	20,510	70	1,465	5	1,465	5	29,300	100
Lishui	2,500	10	6,000	24.8	11,000	44	5,500	21.2	25,000	100

	Landowners		Owner-tenants		Tenants		Agricultural Laborers		Total	
	Families	Percentage	Families	Percentage	Families	Percentage	Families	Percentage	Families	Percentage
Ts'ingt'ien ..	1,315	10	3,944	30	6,574	50	1,315	10	13,148	100
Chinyun	9,000	20	22,500	50	11,250	25	2,250	5	45,000	100
Sungyang ..	1,708	8	3,843	18	4,694	22	2,101	52	21,346	100
Shuich'ang ..	2,020	10	6,070	30	11,130	55	1,627	5	20,847	100
Lungch'uan .	28,574	50	17,144	30	8,572	15	2,858	5	57,148	100
Chingyuan ..	3,716	20	10,219	55	4,645	25	——	—	18,580	100
Yunho	2,926	23.6	4,538	36.6	4,524	36.4	322	3.4	12,810	100
Hsuanp'ing .	5,763	35	2,470	15	6,586	40	1,646	10	16,465	100
Chingning ...	4,493	19.9	6,821	30.3	10,100	44.8	1,086	52	22,500	100
Average	13,350	23.6	18,958	33.6	19,726	35	4,365	7.8	56,399	100

AGRICULTURAL IMPLEMENTS AND GEAR

The agricultural implements commonly used in Chekiang can be classified in five groups, for tilling, irrigating, fertilizing, harvesting, and miscellaneous. In the first group with the exception of ploughs, which cost about $6, none of the implements used are valued at much more than $1 each. Irrigation appliances represent the most expensive items in a farmer's budget, a waterwheel for lifting water into irrigation channels costs from $25 to $60, but the implements used for fertilizing and harvesting are very cheap, the most expensive not exceeding $3. In addition to the appliances classified under the four categories mentioned there are reed mats on which to spread crops when drying in the sun, wooden rice-mill, wind-mill, sieves, etc.

INCOME AND EXPENDITURE OF RURAL POPULATION

Owing to the fall in the prices of agricultural products, the income of the rural population from its primary occupation has been greatly reduced, while money made from important secondary occupations, such as silkworm rearing, paper-making, and cotton and silk wevaing, has been decreasing as a result of the slump in the silk business and the competition of machine-made goods. The following table gives the sources of annual income of an average farmer in Haining:—

Rice	$ 91.8
Wheat	18.0
Peas	14.4
Beans	10.5
Mulberry leaf	20.0
Silkworm rearing	19.5
Live stock	12.0
Firewood	16.0
Others	36.0
Total	$238.2

The very minimum expenditure among farmers is over $100 per family per year, the largest portion (about 75 per cent) being for food, while clothing, housing, etc. forms about 25 per cent. of the annual outlay. The following figures show the cost of living among farmers in various districts:—

		Clothing	Food	Housing	General	Total	Remarks
West Lake	Cost	$11.5	$244	$24	$30.9	$310.4	From report of Hangchow Municipality, 1929
	Percentage	3.7	78.7	7.7	9.9	100	
Linan	Cost	20	200	10	30	260	From report of Chekiang Reconstruction Committee,1931
	Percentage	7.7	77	3.8	11.5	100	
Tungyang	Cost	30	96	4	30	160	From report of Ministry of Industry,1933.
	Percentage	18.8	60	2.4	18.8	100	
Haining	Cost	20	117	83.7		220.7	Under 'others' including rent & tax $27.20, & fertilizer & implements $32.50.
	Percentage	9	53	38		100	

Agricultural labourers are employed on a yearly, monthly, or daily basis or only casually. The average wage of a male day labourer in Chekiang is about 30 cents, and when working on a monthly basis he gets about $7, and on a yearly engagement $65, while women labourers receive 18 cents a day, $3 a month, and $43 a year, usually with lodgings provided free. The wages paid to agricultural labourers in various districts in Chekiang are as follows:—

	MALE			FEMALE		
	Per day	Per month	Per year	Per day	Per month	Per year
Hangchow	.20–.50	5.00–10.00	$30.00–60.00	—	——	——
Hanghsien	.30–.40	5.00	50.00	.20–.30	3.00	$30.00
Haining	.40–.50	10.00–15.00	100.00–150.00	.30–.40	8.00–10.00	80.00–100.00
Fuyang	.30	——	50.00	—	——	30.00
Yühang	.50	15.00	100.00	.20	6.00	——
Linan	.16–.30	5.00–7.00	70.00	.10	3.00	30.00
Yüch'ien	.50	7.00	40.00	—	2.00–6.00	——
Hsinteng	.25	6.00	65.00	.20	3.00	35.00
Ch'anghua	.40	10.00	100.00	.25	6.00	60.00
Chiahsing	.40	10.00	80.00	—	——	——
Chiashan	.50	6.00	60.00	—	——	——
Haiyen	.20–.50	3.00–6.00	30.00–60.00	.10–.30	2.00–4.00	20.00–40.00
Ts'ungteh	.40	10.00	40.00	.20	5.00	25.00
P'inghu	.25	4.00	45.00	.20	3.00	35.00

	MALE			FEMALE		
	Per day	Per month	Per year	Per day	Per month	Per year
T'unghsiang	.50	10.00	40.00–50.00	.16–.20	1.00–3.00	12.00–24.00
Wuhsing	.30–.50	——	40.00–60.00	—	——	——
Ch'anghsing	.50	12.00	100.00	.30	9.00	60.00
Tehts'ing	.30	8.00	50.00	—	4.00	——
Wuk'ang	.34	8.00	90.00	.15	3.00	36.00
Anchi	.30–.50	6.00	44.00	.16–.25	2.00–3.50	18.00–26.00
Hsiaofeng	.50	10.00	120.00	.30	6.00	72.00
Ninghsien	.35–1.00	8.00	20.00–100.00	—	——	——
Ts'uch'i	—	——	——	—	——	——
Fenghua	.50	12.00	100.00	.20	3.50	30.00
Chenhai	.15–.20	4.00–8.00	36.00–50.00	.12–.20	——	——
Tinghai	.40	——	60.00	—	——	——
Hsiangshan	.50	8.00	100.00	.20	2.00	30.00
Nant'ien	.30	6.00	45.00	—	3.00	——
Shaohsing	.40–.80	5.00–10.00	60.00–96.00	—	——	——
Hsiaoshan	.15–.25	3.00–6.00	40.00	.10–.20	2.00–4.50	25.00
Chuchi	.30–.56	7.00–15.00	70.00	.20	3.00	——
Yüyao	.60	15.00	120.00	.40	8.00	80.00
Shangyü	.25–.40	6.00	60.00	.10	2.00	20.00
Ch'enghsien	.25	6.00	60.00	.12	2.00	20.00
Hsinch'ang	.25	8.00	60.00	—	——	——

	MALE			FAMALE		
	Per day	Per month	Per year	Per day	Per month	Per year
Linhai	.30	5.00	40.00	.15	1.50–3.00	15.00
Huangyen	.30	7.00	50.00	.17	3.00	30.00
Ninghai	.25–.50	7.50	90.00	.10–.30	1.50	18.00
Wenling	.30	6.00	30.00–40.00	.10	2.00	20.00–30.00
T'ient'ai	.30	9.00	50.00	.10	4.00	12.00
Hsienchü	.15	4.00	40.00	.10	2.00	25.00
Chinhua	.50–.80	15.00	80.00	—	——	——
Lanch'i	.24	6.00	60.00	.10	2.50	30.00
Iwu	.30	6.00	50.00	.10	1.50	16.00
Tungyang	.25	7.50	40.00	.25	——	18.00
Yungk'ang	.40–.75	——	70.00–120.00	.20–.35	——	36.00–60.00
Wui	.40	7.00	90.00	.10	2.00	16.00
P'ukiang	.25	——	40.00	—	1.00	——
T'anch'i	.30	6.00	80.00	.10	1.70	13.00
Ch'ühsien	.35	6.00	40.00	—	——	——
Lungyu	.25	6.40	50.00	.05	1.50	18.00
Kiangshan	.20	5.00	50.00	—	——	——
Ch'angshan	.30	7.00	40.00	—	——	——
K'aihua	.25	7.00	40.00	.06	1.00	——
Chienteh	.50	10.00	100.00	.25	4.50	60.00
Shunan	.25	8.00	40.00	.10	2.00	24.00

	MALE			FEMALE		
	Per day	Per month	Per year	Per day	Per month	Per year
T'unglu	.50	9.00	100.00	.10	2.00	24.00
Shuian	.50	5.00	40.00	—	——	——
Shouch'ang	.50	6.00	60.00	—	——	——
Fenshui	.30–.40	3.00–4.00	30.00–50.00	—	2.00–3.00	20.00–30.00
Yungchia	.50–.80	12.00	75.00	—	——	——
Juian	.20–.30	3.00–6.00	20.00–70.00	—	——	——
Lots'ing	.70	——	60.00	—	——	——
P'ingyang	—	4.50	55.00	—	——	——
T'aishun	.40	3.00–8.00	20.00–60.00	—	——	——
Yühuan	.40–.50	——	60.00	—	——	20.00–30.00
Lishui	.50–.70	10.00–11.00	60.00–130.00	.10	3.00–4.00	36.00–50.00
Ts'ingt'ien	.40–.50	5.00–8.00	60.00–100.00	.10–.20	2.00	24.00–50.00
Chinyun	.30	8.00	50.00–80.00	.15	3.50	20.00–30.00
Sungyang	.25	——	60.00	.10	——	20.00
Shuich'ang	.45	8.00	100.00	.20	4.00	30.00
Lungch'uan	.80	12.00	130.00	.50	8.00	80.00
Ch'ingyuan	.50–1.00	10.00–12.00	120.00–150.00	—	——	——
Yunho	.25	3.00	40.00–50.00	.15	2.00	25.00–30.00
Hsuanp'ing	.20	4.00–6.00	24.00–48.00	.05–.08	0.60–1.00	8.00–12.00
Chingning	.50	9.00	80.00	—	——	——
Average	.37	7.56	65.00–40.00	.18	3.15	43.30

RURAL FINANCE

Generally speaking, the incomes of Chekiang farmers scarcely meet their expenditure. Formerly loans were raised from local moneylenders at prohibitive rates of interest, but recently modern financial organisations in Chekiang have made loans to farmers with successful results, despite the prevalence of more primitive methods of borrowing money.

The following are some of the more common forms of raising loans adopted by farmers in Chekiang when in need of funds:—

Loans.—Collateral security is not always needed for a short term loan if the borrower can get a guarantor and mediator to sign the contract. Lenders are generally dealers in agricultural produce, and the rate of interest is 2 per cent per month. Sometimes agricultural products are accetped in payment of interest. At Ts'ungteh, if a loan is made with deliveries of rice as interest, the farmer pays 6 *tou* of rice a year for a loan of $10 against a *mou* of land as security. Sometimes mulberry leaves are sold in advance of picking at about half the market price.

Pawning.—Although pawnshops are among the sources turned to for financial aid by farmers, there are only a few of these institutions in the villages. (See Chapter on Pawnshops).

Mortgages.—Mortgaging of land is one of the common methods of securing long term loans. After the borrower receives his money the land is either put under management of the creditor, with the produce of the land pledged as interest until the debtor pays off the mortgage, or the borrower retains the right of tilling the soil against payment of interest in cash.

Hui or "Loan Clubs."—Another method for securing financial accommodation is by forming a *hui* (會) or "loan club." Each member pays an equal sum of money to the manager (who is himself member) at fixed intervals, the total collected being available for loans. The order in which members may obtain advances is determined either by lot or mutual agreement.

Farmers' Bank or Loan Office.—In September, 1928, plans were made for opening a Farmers' Bank, the loaning

of money to farmers through co-operative societies organized by the bank being the chief function of the organization. The following year, however, saw the opening of the Hangchow Branch of the Agriculture and Industry Bank of China, to which the provincial authorities advanced over $380,000 to be distributed as loans to officially recognized co-operative societies at low interest. The plan for establishing a Farmers' Bank was abandoned with the opening of this concern. The following figures show the amount of money loaned and repaid during four years:—

	Credit	Sums Loaned with Pledge	Total
1929*	$400	$31,900	$32,300
1930	25,145	94,786	119,931
1931	8,806	71,772	80,578
1932	11,535	39,350	50,885
Percentage	16.14	83.86	100.0

	Credit	Sums Re-paid with Pledge	Total
1930	$10,785	$88,010	$98,795
1931	9,600	46,875	56,475
1932	3,490	1,360	4,850
Percentage	14.15	85.85	100.00

The development of these financial facilities in Chekiang has been very rapid. Farmers' banks are found at Ch'ühsien, Haining, and Chiahsing, and loan offices have been established at Ts'ungteh, Tehts'ing, Yüyao, Wuhsing, Ch'enghsien, Haiyen, Chinhua, Juian, Yungchia, P'ingyang, Hsiaofeng, Lanch'i, and Nant'ien, while at P'inghu, T'unghsiang, Ch'anghsing, K'aihua and Tunglu definite amounts have been set aside for organizing farmers' banks. Loans are made either on personal credit or agricultural produce at interest ranging from 8 to 10 per mille per month, advances being generally used for buying seed or fertilizer or for silkworm-rearing.

For loans obtained from organizations other than those mentioned in the preceding paragraph, interest is usually charged at 1 to 2 per cent per month, sometimes even as high as 4 per cent. The following table shows the rates of interest generally prevailing in various districts:—

*November and December only

	Maximum %	Average %
Hangchow Municipality	2	1.5
Hanghsien	3	1.5
Haining	2	1.5
Fuyang	4	2
Yühang	2	1.2
Linan	2	1.5
Yüch'ien	2.5	1.66
Hsinteng	2.5	1.2
Ch'anghua	1.8	1
Chiahsing	3	1.6
Chiashan	2.9	2
Haiyen	2	1.2–1.5
Ts'ungteh	2	8
P'inghu	4	2
T'unghsiang	8	8
Wuhsing	3	2
Ch'anghsing	2	1.5
Tehts'ing	4	1.6
Wuk'ang	2	1.5
Anchi	2	1.5
Hsiaofeng	2.5	2
Ninghsien	1.5	1.1,1.2
Ts'uch'i	2	1.5
Fenghua	2	1.2
Chenhai	3	2
Hsiangshan	2	1.5
Nant'ien	3	2
Shaohsing	2	1.2
Hsiaoshan	3.5	2
Chuchi	3	1.5
Yüyao	2	1.5
Shangyü	2	1.5
Ch'enghsien	3.5	2
Hsinch'ang	4	2.5
Linhai	3	2
Huangyen	1.7	1.3
Ninghai	2	1.8
Wenling	2	1.5
T'ient'ai	2	1.4
Hsienchü	2	1.5
Chinhua	1.5	1.5
Lanch'i	2	1.6
Tungyang	2	9–1.5
Iwu	2	1.6
Yungk'ang	3	1.5
Wui	2	1.6
P'ukiang	2	1.4
T'angch'i	2	1.8

	Maximum %	Average %
Ch'ühsien	2	.8–1
Lungyü	3	2
Kiangshan	2.5	1.8
Ch'angshan	2	1.8
Kaihua	2	1.8
Chienteh	2	1.8
Shunan	2	.4–2
Tunglu	2.5	1
Shuian	2	1.6
Shouch'ang	2	1–14
Fenshui	3	2
Yungchia	2	1.8
Juian	2	1.5
Lots'ing	2.5	2
P'ingyang	2.5	1.5–2
T'aishun	1.6	1.2
Yühuan	—	2
Lishui	3	2
Ts'ingt'ien	2	1
Chinyun	1.5	1.25
Shuich'ang	2	1.5
Lungch'uan	2	1.5
Ch'ingyuan	2	1.2
Yunho	2	1.5
Hsuanp'ing	2	1.5
Chingning	2	1.5

CO-OPERATIVE SOCIETIES

The co-operative movement was inaugurated in Chekiang in 1928, when 22 societies were formed, mostly in Hanghsien and Chiahsing, with a few in Ch'enghsien and Haining. The following year over 170 societies were established in 15 districts, an eight-fold increase within twelve months. Further increases were witnessed in 1930 and 1931, in the former year 287 and in the latter 103 new societies being organised. In September, 1932, the number of co-operative societies was 701, with 18,300 members and a capital of $80,700, Chekiang having 26 per cent of the societies of this kind in China, and members representing 18 per cent and capital representing 16 per cent of the strength of the movement. Two out of every 100 in Chekiang are credit co-operative societies. In the following table particulars are given of various types of co-operative societies in Chekiang:—

	Credit	Supply	Production	Marketing	Insurance	Consumption	Combination	Total	Members	Capital
Hangchow Municipality	6	—	7	—	—	2	—	15	356	$ 1,190
Hanghsien	99	—	1	—	—	—	3	103	2,817	16,038
Haining	31	—	—	—	—	—	—	31	738	2,684
Fuyang	28	—	—	—	—	—	—	28	1,260	6,551
Yühang	86	—	—	—	—	—	—	86	1,813	3,866
Linan	19	—	—	—	—	—	—	10	348	1,018
Hsinteng	—	—	—	—	—	—	1	1	11	55
Chahsing	66	—	1	2	—	1	5	76	1,328	5,493
Chiashan	15	—	1	—	—	3	—	19	728	3,682
Haiyen	21	—	—	—	—	—	1	22	560	777
Ts'ungteh	80	—	—	1	—	—	1	82	1,747	3,318
P'inghu	5	—	—	—	—	1	1	7	228	1,673
Wuhsing	18	—	1	—	—	—	1	20	721	2,676
Ch'anghsing	6	—	1	—	—	1	—	8	141	1,002
Tehts'ing	71	—	—	—	—	—	—	71	1,522	5,875
Wu'kang	10	—	—	1	—	1	—	2	247	716
Anchi	1	—	—	—	—	—	—	1	16	16
Hsiaofeng	2	—	—	—	—	—	—	2	31	124
Ninghsien	1	2	—	—	1	—	1	—	461	3,596
Shaohsing	1	—	—	1	—	—	1	5	76	9,310

	Credit	Supply	Production	Marketing	Insurance	Consumption	Combination	Total	Members	Capital
Hsiaoshan	6	—	—	—	—	—	—	6	1,006	1,283
Chuchi	3	—	—	—	—	1	—	4	278	2,236
Yüyao	7	—	—	—	—	—	3	10	396	1,728
Ch'enghsien	19	—	—	—	—	—	—	19	516	2,584
Chinhua	16	—	—	—	—	—	—	16	272	1,099
Lanch'i	1	—	1	—	—	—	—	2	25	266
P'ukiang	3	—	—	—	—	—	—	3	70	240
Ch'ühsien	11	—	—	—	—	—	—	11	159	746
Yungchia	6	—	—	—	—	—	3	11	213	528
Juian	3	—	—	—	—	1	1	5	141	1,249
P'ingyang	1	—	—	—	—	—	1	2	102	554
Shuich'ang	1	—	—	—	—	—	—	1	30	128
Total	643	2	13	5	1	11	22	705	18,357	80,731

CHAPTER IV

FARMERS' SECONDARY OCCUPATIONS

IN CHINA farmers rely very largely on incomes from secondary occupations. Although the nature of those occupations differs according to the materials available, the local demand for such products, and other conditions, they all utilize natural raw materials in the manufacture of simple products. In Chekiang such secondary occupations can be classified in six groups: (1) spinning and weaving with wooden looms and machines, (2) braiding by hand, (3) knitting and net making, (4) simple manufacturing processes, (5) breeding livestick, (6) wood-cutting and fishing.

The distribution of these secondary occupation is very closely related to local conditions in the various districts. For instance, in Hangchow, Chiahsing, and Wuhsing there are large numbers of mulberry trees, and many farmers sell mulberry leaf and rear silkworms when they are not very busy in the fields, while in Ch'ühsien and Fuyang they are commonly engaged in making paper as a secondary business. In Tungyang and Chinhua, ham-curing centres, farmers breed pigs as a side-line, and in Shaohsing they make rice-wine for sale. When the harvest season is over, farmers in districts along coast, like Tinghai, Chenhai, and Ninghai, engage in fishing, while in mountainous districts like Anchi and Lungyu gathering fire-wood has become a regular secondary occupation. Many farmers in Yüyao, Wenling, and Ninghsien are engaged in making straw hats. The large forests of tung and tallow trees in the prefectures of Yenchow and Chüchow leads to the manufactures of tung oil and vegetable tallow as secondary occupations in those districts. The following is a list of the various subsidiary occupations followed by farmers in different districts in Chekiang:—

Hangchow Municipality—Weaving of silk fabrics.

Hanghsien—Weaving of hemp cloth, making of straw shoes, bamboo baskets, bean cu d, and paper, rearing silk-worms, and cultivating mulberry trees.

Haining—Cotton spinning and weaving, hosiery-making, silkworm-rearing.
Fuyang—Paper making.
Yüch'ien—Paper making.
Hsinteng—Paper-making
Ch'anghua—Paper-making.
Chiahsing—Weaving silk and cotton fabrics.
Chiashan—Cotton-weaving and tile-making.
Haiyen—Cotton and grass-cloth weaving.
Ts'ungteh—Silk and cotton-weaving.
P'inghu—Cotton-weaving.
T'unghsiang—Bee-keeping and cotton and silk-weaving.
Wuhsing—Making of silk-wadding, planting water caltrop, raising bees and silkworms, and weaving pongee.
Changhsing—Making bed quilts, weaving pongee, making woolen yarn and ramie thread.
Tehts'ing—Cotton-weaving.
Wuk'ang—Silkworm-rearing.
Anchi—Wood-cutting.
Hsiaofeng—Preparing bamboo shoots.
Ninghsien—Fishing and straw-hat making.
Ts'uch'i—Fishing, and making straw hats and rope.
Fenghua—Making umbrellas, fans, and thread.
Chenhai—Making nets.
Tinghai—Fishing.
Hsiangshan—Making nets and weaving.
Nant'ien—Fishing.
Shaohsing—Fish culture, wood-cutting, making straw shoes, and cotton-weaving.
Hsiaoshan—Fish culture and cotton-weaving.
Chuchi—Bee-keeping.
Yüyao—Straw hat-making.
Shanyü—Straw shoes and hats.
Ch'enghsien—Silkworm rearing.
Hsinchang—Silkworm rearing.
Linhai—Making umbrallas, paper, hemp shoes, and cotton weaving.
Huangyen—Making straw hats, mats, wicks, paper, fans, and cloth and silk taffeta weaving.
Ninghai—Paper and net-making.
Wenling—Making straw hats and porcelain.
T'ient'ai—Rope-making.
Hsienchü—Raising pigs, poultry, sheep, goats, and bees.
Chinhua—Bee-keeping.
Lanch'i—Cotton-weaving, making straw and rush shoes, ropes, and linen thread.
Tungyang—Silk-weaving, ham-curing, and pig-raising.
Iwu—Brown sugar making, ham-curing, and pig-raising.

Yungk'ang—Making straw hats and hair-nets, weaving cloth, ham-curing.
Wui—Bee-keeping.
P'ukiang—Making bamboo-sheath hats and paper, and silk-reeling.
T'angch'i—Making charcoal and wood-cutting.
Ch'ühsien—Making fans, ropes, straw hats, tiles and bricks, and bowls.
Lungyu—Wood-cutting.
Kiangshan—Making fans and hats.
Ch'angshan—Making brown sugar and rape-seed-oil.
K'aihua—Making tea-oil.
Chienteh—Raising silkworm, fish, bees, pigs and poultry.
Shunan—Cloth-weaving.
Tunglu—Making paper.
Fenshui—Silk-reeling.
Yungchia—Burning sea-shells for lime.
Shuian—Making sugar and paper.
Lots'ing—Making mats, gunny sacks, bamboo ware, and lace and weaving cloth.
P'ingyang—Silk, hemp, cotton-weaving, and sugar-making.
T'aishun—Yeast-making.
Yühuan—Fishnig.
Lishui—Cotton spinning and weaving, and raising chickens and silkworms.
Ts'ingt'ien—Cotton-weaving, making tea, tung oil, vegetable tallow, prima tallow, and stellingia oil.
Chinyun—Cotton-weaving, hosiery and mat, and fan-making.
Sungyang—Making paper and firecrackers.
Lungchuan—Making paper and umbrellas.
Yunho—Making mats.
Hsuanp'ing—Paper-making.
Chingning—Paper-making.

It is the general rule that the more prosperous the district, the more variety in the secondary occupations followed.

Farmers often change their subsidiary occupations with the seasons as although some can be pursued all the year round, a change is sometimes necessary owing to the abundance or shortage of raw materials, limits of market seasons, or the urgent claims of field work. The following particulars show the main distribution of farmers' secondary occupations in the four seasons and during the whole year:—

Spring—Weaving and spinning, silkworm rearing, pongee weaving, poultry raising, silk reeling, rope, hemp thread, gunny sacks, and sugar making.

Summer—Silk weaving, bee culture, fans, hats, rape-seed oil, sugar making, and silk-reeling.

Autumn—Silk and hemp weaving, water caltrop picking, brown sugar and mat-making, silk-reeling.

Winter—Weaving of grasscloth and other cloth, cotton-spinning, making paper, rope, brown sugar, gunny sacks, tea and tung oil.

All the year round—Cotton, hemp, and silk weaving, making straw and rush shoes, bean curd, hosiery, paper, tiles, bricks, woollen yarn, umbrallas, fans, nets, straw and bamboo-sheath hats, charcoal, porcelain, rope, mats, bamboo ware, lace, firecrackers, raising pigs, sheep and goats, and cotton-spinning.

It is difficult to obtain accurate statistics regarding those engaged in secondary occupation. The Economic Investigation Office of the Reconstruction Commission made a thorough investigation among the farmers of Linan, a summary of which is reproduced as follows:—

	Families	Percentage	Persons	Percentage
Silkworm-rearing	4,522	22.35	14,256	33.00
Silk-reeling	1,445	7.11	3,608	8.35
Fishing	57	0.27	83	0.19
Stock-raising	3,390	16.78	4,228	9.82
Bee-raising	37	0.18	102	0.24
Wood-cutting	4,091	25.18	7,946	18.41
Brewing	1,406	6.92	2,087	4.81
Paper-making	543	2.68	2,192	5.18
	829	4.10	1,575	3.64

	Families	Percentage	Persons	Percentage
Handicraft	520	2.58	1,114	2.58
Dealers & brokers	593	2.66	1,922	4.45
Vendors	113	0.56	195	0.45
Sailing	18	0.09	24	0.06
Sedan-Chair bearer	57	0.28	465	1.13
Transportation	250	1.24	359	0.83
Servants & laborers	1,027	5.05	2,088	4.82
Rafting	155	0.76	303	0.72
Others	1,073	5.31	2,135	4.96
Total	20,243	100.00	43,107	100.00

CHAPTER V

COMMERCE

TRADE in Chekiang Province includes foreign and domestic business, the latter being further divided into inter-provincial trade and inter-*hsien* trade within the Province. In regard to the first category details may be obtained from the reports issued by the Chinese Maritime Customs, but it is almost impossible to secure accurate records relating to trade between provinces and among *hsien*.

FOREIGN TRADE

Prior to the opening of treaty-ports to foreign trade, the cities of Ningpo, Yungchia and Hangchow were the chief ports which carried on commerce with foreign countries, but the trade went to Shanghai in the later part of the Tsing Dynasty. In 1878 the foreign trade of Hangchow and Yungchia had disappeared entirely, while Ningpo exported goods worth not more than 20,000 taels and imported about one and a half milion taels' worth. For over a century Hangchow has exported little or nothing, and the exports of Ningpo were insignificant, amounting to only a few thousand taels anunally. Yungchia, or Wenchow, has been the most active of the three, but the total exports of all three ports has never exceeded the million mark, while in the case of imports the average annual volume has exceeded five million. The following table shows the volume of trade through the three Customs Houses in Chekiang:—

FOREIGN TRADE OF CHEKIANG PROVINCE

(Haikuan Taels)

	EXPORTS				IMPORTS				Total Exports & Imports
	Hangchow	Ningpo	Yungchia	Total	Hangchow	Ningpo	Yungchia	Total	
1878	——	21,260	——	21,260	——	1,556,416	——	1,556,416	1,577,676
1888	——	——	——	——	——	21,392	183	21,575	21,575
1898	——	13,153	3,870	17,023	43,252	747,662	11,169	802,083	819,106
1908	559	136,902	69,688	207,149	212,404	4,077,932	73,396	4,363,732	4,570,881
1913	——	690	——	690	558,060	2,890,195	2,857	3,451,112	3,451,802
1918	——	7,137	292	7,429	195,624	3,067,072	22,222	3,284,918	3,292,347
1919	——	3,670	6,984	10,654	146,476	3,126,431	21,162	3,294,069	3,304,723
1920	——	2,018	8	2,026	78,173	3,121,325	7,647	3,207,145	3,209,171
1921	——	21,278	15,682	36,960	81,943	5,187,092	323,034	5,592,069	5,629,029
1922	——	4,959	20,238	25,197	1,495,851	7,285,279	29,025	8,810,155	8,835,352
1923	——	8,851	293,548	302,399	2,520,488	7,064,232	49,525	9,634,245	9,936,644
1924	——	6,619	629,601	636,220	114,766	3,607,105	22,850	3,744,721	4,380,941
1925	——	47,882	499,837	547,719	146,615	5,150,865	40,227	5,337,707	5,885,426
1926	——	25,434	647,246	672,680	1,961,734	8,142,509	19,605	10,123,848	10,796,528
1927	——	24,314	621,693	646,007	1,373,656	10,012,996	226,811	11,613,463	12,259,470
1928	——	29,985	326,510	356,495	74,402	5,957,889	78,824	6,111,115	6,467,610
1929	——	26,177	176,340	202,517	146,537	6,802,002	362,208	7,310,747	7,513,264
1930	——	1,932	230,718	232,650	5,158,282	14,995,735	1,762,964	21,916,981	22,149,631
1931	7,749	155,651	615,556	778,956	211,953	3,824,670	238,555	4,275,178	5,054,134
1932	504,593	212,810	165,940	883,343	113,263	7,294,126	215,506	7,622,895	8,506,238

Hangchow.—Opened to foreign trade by the Shimonoseki Treaty, signed with Japan in 1905, this port had long been an important commercial centre in Chekiang Province, the Grand Canal connecting it with other points in the Province and with Kiangsu, Anhui, Kiangsi, and other provinces. With the completion of the Shanghai-Hangchow-Ningpo Railway, the importance of the Grand Canal diminished and the volume of Hangchow's trade also decreased. The following table shows the recent decline in trade at Hangchow:—

IMPORTS INTO AND EXPORTS FROM HANGCHOW

(HAIKUAN TAELS)

	IMPORTS			EXPORTS	TOTAL	Excess of Exports	Excess of Imports
	From Abroad	From Other Ports	Total Imports				
1926	10,730,563	5,226,184	15,956,747	13,997,295	29,954,042	——	1,959,452
1927	6,238,178	6,474,736	12,712,914	12,921,640	25,634,554	208,726	——
1928	6,869,843	4,912,090	11,781,933	14,407,364	26,189,297	2,625,431	——
1929	7,376,694	5,334,094	12,710,788	15,734,212	28,445,000	3,023,424	——
1930	11,186,087	3,684,860	14,870,947	13,480,771	28,351,718	——	1,390,176
1931	3,332,484	4,091,520	7,424,004	11,109,857	18,533,861	3,685,853	——

From this tables it will be seen that the increase in imports has been very rapid during the past two decades, with 1930 as the peak year and imports amounting to eleven million taels, about four times the figure for the first year of the Republic. Imports of domestic goods from other ports shows a decrease. Exports of Chinese goods from Hangchow amount to over 10 million Haikuan. taels annually. Most of the imports from abroad are transshipped at Shanghai.

Among the more important items imported into Hangchow may be mentioned cotton piece-goods, cereals, sugar, and miscellaneous necessities. Imports from other parts of China consist of soya beans, cereals, oils, tobacco, and cotton goods. Tea is the most important item among Hangchow exports, representing about 50 per cent of the total trade, and silk and silk goods are among the more important export lines.

Ningpo.—Ningpo, an important coastal city, was opened to foreign trade by the Sino-British Treaty signed in 1906. Although foreign trade has been declining, giving place to Shanghai, it still handles the largest amount of trade among the three Chekiang ports, the annual trade amounting to 40 or 50 million Haikuan taels. Import business is especially active, and direct imports from abroad were always greater than native goods imported from other ports until 1931, when the trade in native goods assumed premier importance. The exports of Ningpo chiefly go to other China ports, the portion destined for foreign countries being very small.

Imports consist chiefly of rolled tabocco and coarse cotton cloth, while among exports from Ningpo, grey cotton yarns figure to the value of several million taels, followed by lace, straw braids, etc.

IMPORTS INTO AND EXPORTS FROM NINGPO

(Value in Haikuan Taels)

	IMPORTS			EXPORTS	TOTAL	Excess of Imports
	From Abroad	From Other Ports	Total Imports			
1926	20,270,580	14,090,331	34,360,911	16,205,494	50,566,405	18,155,417
1927	19,065,246	14,720,209	33,785,455	18,513,011	52,398,466	15,272,444
1928	14,976,691	20,923,571	35,900,262	16,397,990	52,298,252	19,502,272
1929	15,737,351	15,528,166	31,265,517	16,913,688	48,179,205	14,351,829
1930	22,761,184	13,756,264	36,517,448	16,735,755	53,252,208	19,781,693
1931	10,950,688	19,417,497	30,368,185	13,800,526	44,168,711	16,567,659

Yungchia—Yungchia, or Wenchow, situated on the Ou River (甌 江) and less than 30 miles from the coasts, can be reached by sea-going steamers, and is the centre of trade in the Ou Valley. According to Customs reports the annual volume of trade is over 10 milion Haikuan taels, with more imports than exports. A large amount of foreign goods used to be imported into Yungchia, but in recent years manufactured goods of home origin make up the greater portion of its imports. Goods imported through the Wenchow Customs consist of grey cotton yarn, cotton goods, and cigarettes, with exports of matting of various descriptions and matches. The following table shows the trade of Yungchia passing through the Wenchow Customs:—

IMPORTS INTO AND EXPORTS FROM WENCHOW

(Value in Haikuan Taels)

	IMPORTS			EXPORTS	TOTAL	Excess of Imports
	From Abroad	From Other Ports	Total Imports			
1926	3,402,500	2,855,467	6,257,967	4,402,739	10,660,706	1,855,228
1927	3,686,134	3,299,488	6,985,622	4,555,734	11,541,356	2,429,888
1928	3,976,903	4,199,249	8,176,152	4,263,957	12,440,109	3,912,195
1929	3,867,690	5,383,315	9,251,005	5,166,544	14,417,549	4,085,461
1930	5,090,819	4,405,426	9,496,245	5,611,652	15,107,897	3,884,593
1931	4,378,567	7,248,653	11,627,220	5,261,499	16,888,719	6,365,721

DOMESTIC TRADE

Very few reliable figures are available in regard to the domestic trade of Chekiang, except those recorded by the Customs, which form but a minor part of the whole. Many commodities are transported on railways, highways and waterways between the *hsien*, for which figures are very hard to get, and mere estimate would not be useful.

Hangchow.—Hangchow imports from other ports Japanese cotton piece-goods, refined oil from America and Europe, sugar from Holland, cigarettes from foreign and Chinese factories, cereals from Kiangsu, Anhui, and points within Chekiang, wine from Shaohsing, pottery and porcelain from Kiangsi, paper from Fukien, medicinal herbs from Kuangtung and Szechuan, hams from Chinlan, oils from Yenchu, and josspaper from Shaohsing. These articles are imported into Hangchow to the value of over 10 million dollars annually.

Among the exports of Hangchow its silk goods are famous all over China and abroad. Tea exported annually amounts to $8,000,000 every year, chiefly destined for foreign countries, and the wine from Shaohsing famous in every part of the country, is shipped to the North and Shanghai through Hangchow.

Ningpo—Fish and marine products are the most important export item from Ningpo, amounting to five million dollars annually. Mattings is also an important product and exported to Japan to the amount of two or three million dollars a year. Cotton grown in Yuyao, with silk, tea and wine from Shaohsing, are shipped to all parts of the country through Ningpo, valued at over 10 million dollars annually.

Yüyao—Situated in the middle of the Ningpo-Tsao-ê section of the Shanghai-Hangchow-Ningpo Railway, Yüyao is an important cotton-growing centre, and the fibre is shipped to Ningpo or Hangchow and transshipped to Shanghai. Salt is exported to the amount of about $3,000,000 a year. Imports consist mainly of cotton piece-goods, cigarettes, refined oil, soya beans, and household necessities.

Chiahsing—This city is well provided with transportation facilities, as it is situated near the centre of the Shanghai-Hangchow-Ningpo Railway. Silk cocoons are the most important product of this *hsien*, and about 20 per cent of the supply is consumed locally, with two million dollars' worth exported every year, chiefly to Shanghai. Large quantities of rice are shipped through Chiahsing, mainly to eastern Chekiang. About 12 million dollars' worth of cotton piece-goods, tobacco, groceries, etc. are imported into this district annually.

Shaohsing—This populous and prosperous centre is an important city between Hangchow and Ningpo. Its wine is in great demand in all parts of the country, especially in Peiping, and the annual export is estimated at about 10 million dollars in value. Among other important exports may be mentioned joss money, silk goods, cocoons, tea, cotton, etc. The chief markets for Shaohsing products are Shanghai, Hangchow, and Ningpo.

Linhai.—Linhai is famous for citrous fruits, which are exported in the early autumn to Shanghai to the value of about half a million dollars. A special variety of tea, "*yunwu*" (雲霧茶) grown in T'ient'ai, is shipped from here.

Yungchia—Better known as Wenchow, Yungchia is a trading port connected with Shanghai, Ningpo, Foochow, Chinwangtao, Tientsin, etc. by sea routes. Its chief product is timber, sold mostly in Shanghai and Ningpo. Wenchow tea is sold chiefly to northern ports and Fukien province. Among other exports coal and umbrellas are shipped to Japan, paper to Formosa, tangerines to Tientsin, medicinal herbs, mattings, leather, alum, etc. to Shanghai and other points in Chekiang.

Wuhsing.—The three most important exports of Wuhsing, better known as Huchow, are silk (coarse and find), silk goods, and bamboo. Fine silk is collected by silk hong from the farmers, and resold to dealers in Nanhsun and Chenchang (震障), and after reeling is known as Tsatlee silk (輯里絲), and is sold to foreign exporters in Shanghai. Coarse silk is used locally for weaving Huchow *chou* (縐) and *hua ssu ke* (華絲葛), which is shipped to Shanghai and thence forwarded to many places in north and south China and along the Yangtse, while a portion is consumed in neighboring cities. Bamboo is sent to Shanghai to the extent of about half the total production, and Soochow and Changchow taking about 40 per cent, the remaining portion being disposed of locally.

Ch'ühsien—Ch'ühsien is situated on the Upper Chientang River, and its chief product is "yellow paper", marketed in Hangchow for shipment to Peiping, Soochow, etc. Timber from Lishui and K'aihua is exported through this city. Other exports consist of fuel, cereals, vegetable tallow, etc. Among imports, porcelain and tea from Kiangsi and salt from Shaohsing are the more important, with silk piece-goods from Hangchow and Soochow, and petroleum from Shanghai next in order.

BUSINESS CUSTOMS

With the exception of a few places where modern business practices are followed, the old business customs are still generally observed. Business enterprises as a rule are small-scale organisations with management conducted in the old style, sometimes efficient but always unscientific. Modern banking is not well developed, as such service is not very necessary. Most of the business firms make use of the services of native banks, which do not require securities for advances so long as borrowers have good personal credit. Merchants and retailers sell their goods on personal credit, and accounts are generally settled at the three festivals, the Dragon festival, mid-autumn festival, and New Year. In a few cities accounts are settled at the end of May, September and January, which are approximately the dates of the three festivals. Monthly settlements are followed by firms in some cities, but the system is not generally adopted.

A very common practice still followed is that of holding fairs at certain intervals or on fixed dates, when farmers from surrounding areas attend the fair with produce of their farms or articles made by the family as a secondary industry. Fairs are most common in Yüyao, Yungk'ang, Sungyang, etc.

Hongs dealing exclusively in different commodities are common, charging commission for selling or buying for clients, though some hongs buy and sell on their own account.

Nearly every trade has its guild, and business practice is regulated by Chambers of Commerce.

CHAPTER VI

CURRENCY

THE CURRENCY circulating in Chekiang consists of standard yuan either in silver or in banknotes, silver and copper subsidiary coins and paper of small denominations. A variety of silver dollars of different mintings circulates in various districts of the Province with different degrees of popularity. For instance in Hangchow, the capital of the Province, Sun dollars, Hangchow minted Yuan Shih-kai dollars, and Kiangnan dollars are most frequently seen while in Haining the Canton, Hupeh, and Kiangnan dollars are most often found. The banknotes circulating in the Province include issues by the Bank of China, Bank of Communications, Central Bank of China, China and South Sea Bank, Chekiang Industrial Bank, the Chekiang Provincial Bank, etc., while subsidiary notes are issued by the Central Bank of China, Bank of China, Bank of Communications and the Provincial Bank in denominations of 10, 20 and 50 cents. Twenty-cent silver coins from the Canton Mints are also seen, and in addition to the above there are Transfer dollars and *chu ch'ou* (竹 籌). The transfer dollar is a book unit and is widely used in Ningpo, Fenghua, Chenhai, Hsiangshan, Nant'ien, Tinghai and Yüyao,[1] while the *chu ch'ou* is a token used by small shops, usually made of bamboo.

SILVER DOLLARS

The silver coins circulating in Chekiang include the Sun dollar, Yuan Shih-kai dollar, and Mexican dollar, the first two being most widely used. Silver sycee were widely used in Hangchow, Wuhsing and Shaohsing, but have been now almost entirely melted down.

The Sun dollar bears the head of the late Dr. Sun Yat-sen and was coined at the Hangchow Mint, particulars being as follows:—

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(1) *Vide*: Chapter on Native Banks.

Minting	Weight (Kuping tael)	Fineness	Silver Content (Kuping tael)
A	0.7122	891.5	0.6339
B	0.7201	891.5	0.6420
C	0.7276	891.5	0.6487

Most of the Yuan Shih-kai dollars circulating in Chekiang were coined at the Hangchow Mint, particulars being as follows:

Minting	Weight (Kuping tael)	Fineness	Silver Content (Kuping tael)
1914	0.7204	880.00	0.6340
1919	0.7163	880.00	0.6303
1920	0.7181	880.00	0.6318
1921	0.7203	880.00	0.6339

Among the Dragon dollars circulating in Chekiang the most common is the Kiangnan dollar. Other varieties are those imported from Kwangtung and Hupeh, while the Peiyang dollar and other dragon dollars minted during the Ching Dynasty are still used. The fineness of the dragon dollar has been fully dealt with in the Industrial Handbook for Kiangsu Province.

Mexican dollars were once widely used as a medium of exchange, but it is now rarely found in the market.

SUBSIDIARY COINS.

Subsidiary currency consists of three main categories, silver coins of 20 and 10-cent denomimations, copper coins, and subsidiary notes.

Most of the 20-cent pieces circulating in Chekiang are imported from Canton, where they were minted. Kiangnan minted coins are also found, but rarely. The following shows particulars of the 20-cent pieces in circulation:—

Minting	Weight (Grammes)	Fineness	Silver content (Grammes)
1918	5.3182	748.7	3.982
1919	5.3378	702.5	3.750
1919	5.3511	630.0	3.382
1920	5.2796	763.0	3.553
1920	5.3170	526.8	2.801
1921	5.3586	698.8	3.745
1922	5.3008	517.7	2.744

Copper coins are the most widely circulated medium of exchange in Chekiang, and the following table shows particulars of these coins:—

Minting	Weight (heaviest)	Weight (lightest)	Heaviest Coin (copper content)	Lightest Coin (copper content)
(Pre-Revolution)				
Chekiang	7.930	6.570	7.490	6.260
Kiangsu	8.402	7.098	8.040	6.760
Kiangsi	7.487	6.880	6.980	6.710
Kuangtung	8.024	6.990	7.680	6.340
Peiyang	7.795	7.142	7.380	6.340
(Post-Revolution)				
National Flag and "Chia Ho"	7.218	5.703	6.710	5.250
National Flag and Flower	7.085	6.311	6.320	5.670
Hunan Star	7.537	6.525	6.800	5.880

Subsidiary notes are issued by the Central Bank of China, Bank of Communications, Bank of China, and China and South Sea Bank, in denominations of 10, 20 and 50 cents.

Most of the *chu ch'ou* are issued by Chamber of Commerce. For instance the Yühang Chamber of Commerce issues *chu ch'ou* in two denominations, 3 and 5 cash. The use of these bamboo tokens is limited to the city districts.

BANKNOTES

The banknotes circulating in Chekiang Province are issued by Chinese and foreign banks in denominations of 1, 5 and 10 dollars. Notes of $50 and $100 are also issued by some of these banks, but the number in circulation is very small. The most widely circulated notes are those issued by the Bank of China, Bank of Communications, Central Bank of China and China and South Sea Bank, those of the Chekiang Industrial Bank, Commercial Bank of China, National Industrial Bank, Ningpo Commercial Bank, and Land Bank of China next.

THE HANGCHOW MINT

The first mint in Chekiang province was established at Hangchow in 1906 for making copper cents but in 1919 began to mint silver dollars. The mint is operated under the auspices of the Ministry of Finance, is equipped with modern machinery of British and American make and employs 360 workers. The following table shows the number of dollars minted at Hangchow during the 10 years ending 1931:—

1922	38,957,408
1923	60,588,153
1924	7,385,424
1925	77,816,500
1926	29,677,000
1927	56,124,523
1928	73,159,621
1929	83,996,815
1930	78,735,800
1931	94,539,500

CHAPTER VII

UTILITIES

POWER-PLANTS

THE FIRST power-plant to be established in Chekiang Province was the Hangchow Plant (杭州電廠), formerly known as the Ta Yu Li Electric Light Company (大有利電燈公司), founded in 1910 by a number of local merchants with a capital of $30,000. Later, owing to the increasing demand for current, capital was increased to $200,000 and the plant converted into a semi-official concern, of which the Government share amounted to $70,000. Subsequently several further increases of capital were made, until in 1921 the authorized capital was raised to $2,000,000, the amount actually paid-up being $1,985,900, including $435,000 held by the Government and $1,550,500 in private-owned shares. In 1922 a new plant was built outside the Kenshanmen Gate equipped with three generators, and having a total capacity of 5,100 K.W. In 1929 the plant reverted to Provincial Government control in the hope of improving general conditions, and another plant was planned at Chakou, a suburb of Hangchow, with a generating capacity of 60,000 K.W. In 1931, however, owing to lack of capital, the plant was mortgaged to a banking consortium in Shanghai, and has been since under its management.

Power-plants in other districts of Chekiang have been all established since the advent of the Republic. The period showing the most rapid development was from 1922 to 1926, during which time 45 plants were established. The following table shows details of the development of power-plants in the Province:

	Total No.	No. in Cities	No. in Towns
1910	1	1	0
1912-1916	8	5	3
1917-1921	20	10	10
1922-1926	45	19	26
1927-1931	33	16	17
1932	1	1	0
Others	12	1	11
Total	120	53	67

Classified according to the nature of their business, Chekiang power-plants may be classified in four categories, those supplying current for power, light and heat, those supplying power and light, those supplying light only, and those supplying light, and power to rice-mills. Of the 102 plants in the Province, 79 belong to the third category (67 per cent), 33 to the fourth category (27 per cent), and four each to the first and second categories (6 per cent).

Of the 75 districts in the Province, 58 have power-plants, those without including Linan, Yüch'ien, Ch'anghua, Nant'ien, Ninghai, T'ient'ai, Hsienchü, Tungyang, T'angch'i, K'aihua, Fenshui, T'aishun, Shuich'ang, Ch'ingyuan, Yunho, Hsuanp'ing, and Chingning. Wuhsing heads the list with the largest number of plants, having eight, Hanghsien, Chiahsing, and Chiashan coming next with six each, and Ninghai coming third with five. In amount of capital Hanghsien comes first with $5,081,000, Ninghsien next with $1,200,000, and Shaohsing third with $1,000,000. With the exception of Wuhsing (which has $800,000) plants in all other districts have a capital of less than $500,000, one being over $300,000, two over $200,000, four over $100,000, 12 over $50,000, and 35 under $50,000. Hanghsien also leads in generating capacity with 22,290 K.W., Ninghsien coming second with 3,464 K.W., Wuhsing third with 2,098 K.W., Shaohsing fourth with 1,420 K.W., and Yungchia fifth with 1,270 K.W., all other districts having less than 1,000 K.W. Detailed figures are as follows:

DISTRIBUTION OF POWER PLANTS IN CHEKIANG

	No. of Plants	Capital	Total Capacity (K. W.)
Hanghsien	6	$5,081,000	22,290
Haining	5	220,000	318
Fuyang	1	20,000	15
Yühang	2	98,000	160
Hsinteng	1	13,000	16
Chiahsing	6	270,100	440
Chiashan	6	71,200	114
Haiyen	2	40,000	61
Ts'ungteh	3	49,600	67
P'inghu	4	142,500	303.5
T'unghsiang	4	67,510	125
Wuhsing	8	810,400	2,099
Ch'anghsing	4	64,000	159
Tehts'ing	3	73,000	110
Wuk'ang	3	38,200	97
Anchi	2	19,600	33
Hsiaofeng	1	3,000	10
Ninghsien	1	1,200,000	3,464
Tz'uch'i	1	30,000	24
Fenghua	1	25,000	67
Chenhai	3	160,000	405
Tinghai	2	80,000	118
Hsiangshan	2	54,000	66
Shaohsing	2	1,010,000	1,420
Hsiaoshan	3	134,000	244
Chuchi	2	33,000	60
Yüyao	3	95,000	145
Shangyü	2	55,000	75.2
Ch'enghsien	2	42,000	89
Hsinch'ang	1	7,000	25
Linhai	2	150,000	145
Huangyen	1	12,000	15
Wenling	1	14,000	14
Chinhua	2	35,400	76.5
Lanch'i	2	66,000	105
Iwu	2	18,900	32.5
Yungk'ang	1	10,000	40
Wui	1	8,000	20
P'ukiang	1	5,000	20
Ch'ühsien	1	70,000	60
Lungyu	1	7,000	15
Kiangshan	1	15,000	30
Ch'angshan	1	40,000	60

DISTRIBUTION OF POWER PLANTS IN CHEKIANG
(Continued)

	No. of Plants	Capital	Total Capacity (K. W.)
Chienteh	1	30,000	55
Shunan	3	14,600	22
T'unglu	1	20,000	30
Shuian	1	6,000	20
Shouch'ang	1	2,600	12.5
Yungchia	1	300,000	1,270
Juian	1	50,000	50
Lots'ing	1	10,000	—
P'ingyang	1	10,000	45
Yühuan	1	8,800	11
Lishui	1	30,000	26
Ts'ingt'ien	1	12,000	18
Chinyun	1	6,000	—
Sungyang	1	21,400	21
Lungchuan	1	10,000	25
Total	120	$10,988,810	34,858.2

FUEL SUPPLIES

The fuel used in Chekiang power-plants is of three kinds, liquid fuel, which is most popular, coal, and charcoal. The former consists chiefly of Socony and A.P.C. products, and owing to difficulty in transportation, the price varies from $70 to over $100 per ton. Coal is mostly imported from Shanghai, the Kailan product being most used, selling at about $30 per ton. Charcoal is the only fuel used by the power-plants of Ch'ühsien and Lanch'i, where supplies are abundant, and the price is only about 2.50 per picul. The Yühang plant takes current from Hangchow for generating purposes.

MOTIVE POWER

Three kinds of generating machinery are used in Chekiang power-plants, steam turbines and reciprocating engines, and oil-engines. The last are most popular, being equipped in 96 plants, and only one plant, at Hangchow, has turbines. Some plants are equipped with two kinds of engines, particulars being as follows:—

GENERATING MACHINERY IN CHEKIANG POWER PLANTS

	Plants.
Oil-engines	96
Steam turbines	1
Steam turbines and reciprocating engines	1
Steam turbines and oil engines	1
Steam-engines	11
Steam and oil-engines	5
Unknown	5
Total	120

The total capacity of the power-plants in the Province amounts to 34,858.2 K.W., of which 32,877.2 K.W. (94 per cent) are consumed by cities, and 1,981 K.W., by towns and villages. The largest plant supplying electricity to a city is the Hangchow Power Plant, with a capacity of 22,100 K.W., and the largest town supplier is the Hsunchen Electric Light Company (浔震電燈公司), with 200 K. W. Sixty plants (30 per cent), are supplying alternating current, and 47 plants (23.5 per cent), direct current, with details of the remaining 13 plants unknown.

CONSUMPTION AND CHARGES

Hangchow has the largest number of consumers with 23,422 households, Ninghsien coming next with 5,533 households, Yungchia third with 4,690 households, Wuhsing fourth with 2,643 households, Shaohsing fifth with 2,210 households, and Chiahsing sixth with 1,985. All other plants supply less than 1,000 households.

The rates ruling in the Province are by no means uniform, but generally electricity for lighting is charged for either at $1-$1.50 per month per lamp of 16 candle-power, or 20 to 30 cents per kilowatt hour. The charge for power and heat is from .04 to 16 cents per kilowatt hour, the rate fixed by the Hangchow Plant being the lowest, from .04 to .064 cent per kilowatt hour.

Particulars relating to each power-plant in the Province are tabulated as follows:—

POWER PLANTS IN CHEKIANG

	Location	Establi-shed	Capital	Capacity K. W	Power.	Current.	Volts	Supplying	Consuming Households
Hangchow (杭州電氣公司)	Hangchow	1908	$ 5,000,000	22,100	Steam Turpine	A/C.	5250 220	Light, power & heat	23,422
Chao Ssu (趙司電氣公司)	〃	1928	6,000	10	Oil engine	D.	220	Light	95
Hsin Min (新明電氣公司)	〃	1919	30,000	68	〃 〃	A/C.	440 220	〃	271
Linping Hsin Chi (臨平興記電氣公司)	〃	1926	21,000	22	Steam engine	D.	220 220	〃	85
Hsuan Yang (宣陽電氣公司)	〃	1923	20,000	55	Oil engine	A/C.	220 220	Light & Rice-milling	252
Fu Er Kang (福爾康電氣廠)	〃	1928	4,000	35	〃 〃	D.	220 220	Light	80
Haining (海寧電廠)	Haining	1928	45,000	60	〃 〃	〃	2300 220	〃	400
Hsiashih (硤石電氣公司)	〃	1913	85,000	180	Steam & Oil engines	A/C.	2200 380 220	〃	757
Changan (長安電氣公司)	〃	1919	25,000	40	Oil engine	〃	220 220	〃	240
Yuan Hua (袁花電氣公司)	〃	1923	25,000	28	Steam engine	〃	2300 220	〃	120

POWER PLANTS IN CHEKIANG *(Continued)*

	Location	Established	Capital	Capacity K. W.	Power	Current	Volts	Supplying	Consuming Households
Changta (昌大電氣公司)	Haining	1928	$40,000	10	Oil engine	D.	220 220	Light & Rice-milling	160
Ping Li (評利電氣廠)	Fuyang	1927	20,000	15	" "	"	220	" " " "	——
Yühang (餘杭電廠)	Yühang	1930	90,000	140	——	A/C.	2200 220	" " " "	662
Pu Ming (普明電氣公司)	"	1929	8,000	20	Oil engine	—	—	Light	——
Hsin Hsing (新興電燈公司)	Hsinteng	1926	13,000	16	" "	A/C.	220 220	Light & Rice-milling	104
Yung Ming (永明電燈公司)	Chiahsing	1912	200,000	340	Steam engine	"	2300 380 220	Light	1,958
Yao Ming (耀明電燈公司)	"	1919	15,000	20	Oil engine	"	380 220	"	168
Chen Hsin (振新電氣公司)	"	1922	30,000	40	" "	"	380 220	Light & Rice-milling	370
Hsin Ming (星明電氣公司)	"	1927	13,600	20	" "	D.	220 220	" " " "	140
Chin Ming (滬明電燈廠)	"	1931	4,000	8	" "	"	220 220	Light	100

POWER PLANTS IN CHEKIANG *(Continued)*

	Location	Establi-shed	Capital	Capacity K. W.	Power	Current	Volts	Supplying	Consuming Households
Ming Feng (明豐電燈廠)	Chiahsing	——	$ 7,500	12	Oil engine	D.	220 220	Oil engine	128
Chang Yao (昌耀電燈公司)	Chiashan	1923	44,900	54	„ „	A/C.	2300 220	„	485
Pu I (普益電燈公司)	„	1925	14,900	32	„ „	„	2300 220	„	70
Kuang Yao (光耀電燈廠)	„	1926	4,000	9	„ „	D.	220 220	„	80
Yu Li (有利電燈公司)	„	1927	4,500	9	„ „	A/C.	220	„	——
Tung Jen (同仁電廠)	„	1926	1,500	5	„ „	D.	220	Light & Rice-milling	59
Chi Ming (啟明電廠)	„	1923	1,400	5	„ „	„	220	Light	——
Hai Yen (海鹽電氣公司)	Haiyen	1920	30,000	44	„ „	A/C.	2300 380 220	„	301
Sheng Tang (沈蕩電氣公司)	„	1926	10,000	17	„ „	D.	220 220	„	150
Yung Min (永民電氣公司)	Ts'ungteh	1928	35,000	32	„ „	A/C.	220 220	Light & Rice-milling	325

POWER PLANTS IN CHEKIANG *(Continued)*

	Location	Established	Capital	Capacity K. W.	Power	Current	Volts	Supplying	Consuming Households
Pu I (普益電氣公司)	Ts'ungteh	1923	$ 8,000	20	Oil engine	A/C.	220 220	Light	184
Pu Li (溥利電氣公司)	„	1924	6,600	15	„ „	„	220 220	„	80
Ming Hua (明華電氣廠)	P'inghu	1929	120,000	253	„ „	„	2200 220	„	1,224
Chapoo (乍浦電氣公司)	„	1920	15,000	25	„ „	„	2300 220	„	155
Hsin Tai (新埭電燈廠)	„	——	3,000	16.5	„ „	D.	220 200	„	80
Ming Hsin (明星電燈廠)	„	1920	4,500	9	„ „	„	220 200	„	86
Tung Hsiang (桐鄉電燈事務所)	T'unghsiang	——	1,500	20	—	—	—	„	108
Wuching Chen (烏青鎮電氣公司)	„	——	40,000	75	Steam engine	A/C.	3150 380 220	„	490
Kung Ming (公明電氣公司	„	1922	22,000	20	Oil engine	„	2300 220	„	256
Pu Ming (溥明電氣公司)	„	1925	4,010	10	„ „	D.	220 220	„	250

POWER PLANTS IN CHEKIANG *(Continued)*

	Location	Established	Capital	Capacity K. W.	Power	Current	Volts	Supplying	Consuming Households
Wuhsing (吳興電氣公司)	Wuhsing	1914	$600,000	1,708	Oil engine	A/C.	5250 380 220 110	Light, power & heat	2,643
Hsuangling (雙林電氣公司)	"	1922	40,000	36	Steam engine	D.	220	Light	306
Ming Hu (明湖電氣公司)	"	1925	40,000	90	Oil engine	"	220	Light & power	252
Lien Shih (練市電燈廠)	"	——	4,400	12.5	" "	"	220	Light	165
Jui Fu (穗孚碾米電燈公司)	"	1920	10,000	26	" "	"	440 220	Light & rice-milling	60
Shun Chen (海震電燈公司)	"	1917	100,000	200	Steam engine	A/C.	2300 110	Light	—
Hsin Min (新民電燈碾米廠)	"	1928	6,000	9	Oil engine	D.	220	Light & rice-milling	120
Ta Ming (大明電燈公司)	"	1913	10,000	17.5	" "	"	220	Light	120
Chang Ming (長明電氣公司)	Ch'anghsing	1920	40,000	100	" "	A/C.	2300 220	Light & rice-milling	240

POWER PLANTS IN CHEKIANG *(Continued)*

	Location	Established	Capitul	Capacity K. W.	Power	Current	Volts	Supplying	Consuming Households
Szean (酒安電廠)	Ch'anghsing	1919	$15,000	40	Oil engine	A/C.	2200 220	Light & rice-milling	344
Hung Chi (虹溪電氣公司)	〃	1929	6,000	15	〃 〃	D.	110	〃 〃 〃	200
Ho Ping (和平電燈公司)	〃	1931	3,000	4	〃 〃	〃	110	〃 〃 〃	60
Tehtsing (德清電氣公司)	Tehts'ing	1923	24,000	59	〃 〃	A/C.	220 220	Light	191
Hsin Shih Chai Chi (新市才記電燈公司)	〃	1918	40,000	36	Gas	D.	220 220	〃	324
Yuan Ta (遠大電燈碾米廠)	〃	——	9,000	15	Oil engine	〃	220 220	Light & rice-milling	46
Shang Po (上柏電氣公司)	Wuk'ang	1928	7,000	17	〃 〃	〃	220 220	Light	——
Mo Kan Shan (莫干山電廠)	〃	——	30,000	40	——	A/C.	220	〃	——
Fu Chi (阜溪電燈廠)	〃	——	1,200	40	Oil engine	—	—	〃	——

POWER PLANTS IN CHEKIANG *(Continued)*

	Location	Established	Capital	Capacity K. W.	Power	Current	Volts	Supplying	Consuming Households
Fu Tan (復旦電燈廠)	Anchi	1928	$ 9,600	20	Oil engine	D.	220	Light	——
Mei Hsiao Kuang Ming (梅曉光明電燈公司)	〃	1919	10,000	13	〃 〃	〃	220	〃	120
Yung Yao (永耀電力公司)	Ninghsien	1914	1,200,000	3,464	Steam engine & steam turbine	A/C.	2300 380 220	Light, power & heat	5,533
Tzu Ming Hung Chi (慈明鴻記電燈公司)	Tz'uch'i	1920	30,000	24	Oil engine	〃	2300 220	Light	240
Chenhai (鎮海電燈公司)	Chenhai	1922	120,000	350	——	—	—	〃	——
Chao Ming (昭明電氣公司)	〃	1928	30,000	40	Oil engine	A/C.	2300 380 220	〃	422
Ming Yuan (明遠電燈廠)	〃	——	10,000	15	〃 〃	D.	—	〃	——
Yao Hua (耀華電氣公司)	Hsiangshan	1925	24,000	41	〃 〃	A/C.	220	〃	——

POWER PLANTS IN CHEKIANG *(Continued)*

	Location	Establi-shed	Capital	Capacity K. W.	Power	Current	Volts	Supplying	Consuming Households
Ming Hsin (明星電氣公司)	Hsiangshan	1924	$30,000	25	Gas	A/C.	380 220	Light	417
Chu Shan (舟山電電公司)	Tinghai	1920	50,000	90	Oil engine	〃	2300 220	〃	894
Shen Chia Meng (沈家門電氣公司)	〃	1924	30,000	28	Gas	〃	220	〃	285
Fenghua (奉化電氣公司)	Fenghua	1926	25,000	67	Oil engine		220 220	Light & rice-milling	——
Ta Ming (大明電氣公司)	Shaohsing	1912	1,000,000	1,408	Steam & oil engines	〃	2300 220 220	Light, power & heat	2,210
Chen Hsin (振興電氣公司)	〃	1925	10,000	12	Oil engine	D.	110	Light & rice-milling	34
Yung An (永安電氣公司)	Hsiaoshan	1928	100,000	170	〃 〃	A/C.	2300 380 220	〃 〃 〃	192
Ming Teh (明德電氣公司)	〃	1926	10,000	18	〃 〃	D.	220	〃 〃 〃	160
Chien Yuan (乾元電氣公司)	〃	1915	24,000	56	〃 〃	A/C.	2300 220	〃 〃 〃	240

POWER PLANTS IN CHEKIANG *(Continued)*

	Location	Established	Capital	Capacity K. W.	Power	Current	Volts	Supplying	Consuming Households
Chu Chi (諸暨電氣公司)	Chuchi	1916	$20,000	40	Oil engine	A/C.	220 220	Light	—
Feng Chiao (楓橋電氣公司)	„	1926	13,000	20	„ „	„	220 220	Light & rice-milling	120
Yu Yao (餘姚電氣公司)	Yüyao	1917	50,000	100	„ „	„	2300 220	Light	336
Chen Ta (正大電燈公司)	„	1930	40,000	45	„ „	„	380 220	„	400
Jui Ho (瑞和電燈公司)	„	—	5,000	—	———	—	—	„	—
Chen Ta (正大電燈公司)	Shangyü	1926	35,000	47.2	Oil engine	A/C.	380 220	Light & rice-milling	138
Jui Yao (穗耀電燈碾米廠)	„	—	20,000	28	„ „	„	380 220	Light	38
Kai Ming (開明電廠)	Ch'enghsien	1919	30,000	64	„ „	„	2300 220	„	328
Ssu Er (四而電氣公司)	„	1926	12,000	25	„ „	D.	380 220	„	55
Chin Hsin (金星電氣公司)	Hsinch'ang	1932	7,000	25	„ „	A/C.	220 220	„	86

POWER PLANTS IN CHEKIANG *(Continued)*

	Location	Established	Capital	Capacity K. W.	Power	Current	Volts	Supplying	Consuming Households
Yao Ming (耀明電燈公司)	Linhai	1928	$ 50,000	45	Oil engine	A/C.	380 220	Light	400
Heng Li Tai Chi (恆利泰記電氣公司)	„	1927	100,000	100	Gas & Oil engines	„	220 220	„	726
Heng Li Tai Chi Branch (恆利泰記電氣公司第二支廠)	Huangyen	1922	12,000	15	Oil engine	„	220 220	„	180
San Wang (三萬碾米電燈廠)	Wenling	1924	14,000	14	„ „	—	—	„	—
Chang Ming (長明電氣公司)	Lanch'i	1923	60,000	95	Gas & Oil engines	A/C.	2300 220	Light & rice-milling	600
Pao An (保安電燈公司)	„	1922	6,000	10	Oil engine	D.	220	Light	150
Hsiao Feng (孝豐鎮電燈廠)	Hsiaofeng	1926	3,000	10	„ „	„	—	„	—
Iwu (義烏電氣公司)	Iwu	1928	14,400	20	„ „	„	220	„	150
Fe Tang (佛堂電氣公司)	„	1926	4,500	12.5	„ „	„	220	„	—
Chinhua (金華電燈公司)	Chinhua	1922	25,000	64.5	„ „	A/C.	2300 220	„	320

POWER PLANTS IN CHEKIANG *(Continued)*

	Location	Establi-shed	Capital	Capacity K. W	Power	Current	Volts	Supplying	Consuming Households
Hou Sheng (厚生電燈公司)	Chinhua	——	$10,400	12	Oil engine	—	—	Light & rice-milling	——
Yung Kang (永康電燈公司)	Yung'kang	1922	10,000	40	〃 〃	D.	220 220	〃 〃 〃	160
Wui (武義電氣公司)	Wui	1925	8,000	20	〃 〃	—	—	Light	——
Ch'ühsien (衢縣電氣公司)	Ch'ühsien	1920	70,000	60	Gas	A/C.	2300 220	〃	877
Lungyu (龍游電氣公司)	Lungyu	1925	7,000	15	Oil engine	D.	220 110	〃	——
Yung Yao (永耀電氣公司)	Kiangshan	1928	15,000	30	〃 〃	A/C.	400 220	〃	132
Hua Wen (華文電氣公司)	Ch'angshan	1925	40,000	60	〃 〃	〃	—	〃	——
Chienteh (建德電氣公司)	Chienteh	1926	30,000	55	〃 〃	〃	2300 220	〃	348
Ming Lo (明樂電燈廠)	Shunan	1924	9,600	10	〃 〃	D.	220 220	Light & rice-milling	130
Po Li An (博利安電燈廠)	〃	1924	2,000	4	〃 〃	—	—	Light	——

POWER PLANTS IN CHEKIANG *(Continued)*

	Location	Establi-shed	Capital	Capacity K. W.	Power	Current	Volts	Suppiying	Consuming Households
Kuang Hua (光華電燈廠)	Shunan	1927	$ 3,000	8	Oil engine	D.	220 220	Light	——
Chou Jen Yu Chen Chi (周仁豫正記電燈公司)	T'unglu	1920	20,000	30	„ „	A/C.	2300 220	„	300
Pu Ming (普明電燈公司)	Shuian	1927	6,000	20	„ „	—	—	Light & rice-milling	——
Chen Chin Hsing (程錦興電燈碾米廠)	Shouch'ang	1927	2,600	12.5	„ „	—	—	„ „ „	——
Pu Hua Hsing Chi (普華興記電氣公司)	Yungchia	1914	300,000	1,270	Steam Turbine & Oil engine	A/C.	2300 380	Light & power	4,690
Pu Ming (普明電燈公司)	Lishui	1919	30,000	26	Oil engine	D.	220 220	Light	148
Chi Ji (機日電氣公司)	Ts'ingt'ien	1928	12,000	18	„ „	„	220 220	„	275
Hua Yang (華陽電燈公司)	Sungyang	1926	21,400	21	„ „	„	200	Light & rice-milling	——

POWER PLANTS IN CHEKIANG *(Continued)*

	Location	Established	Capital	Capacity K. W.	Power	Current	Volts	Supplying	Consuming Households
Pu Yao (普耀電燈公司)	Lungch'uan	1926	$10,000	25	Oil engine	D.	200	Light	—
Nan Ti (南堤電氣公司)	Juian	1928	50,000	50	Gas	A/C.	2300 200	Light & Power	330
Lo Chen (樂成電燈公司)	Lots'ing	1923	10,000	—	Oil engine	—	—	Light & rice-milling	—
Kuang Hua (光華電燈碾米公司)	P'ingyang	1926	10,000	45	„ „	—	—	„ „ „	—
Ta Kuang Ming (大光明電燈公司)	P'ukiang	1927	5,000	20	„ „	D.	—	Light	—
Kan Meng (坎門電燈公司)	Yühuan	1927	8,800	11	„ „	„	220	Light & rice-milling	110
Kuang Ming (光明電燈公司)	Chinyun	1929	6,000	—	„ „	—	—	„ „ „	—
Total 120			$10,988,810	34,858.2					

WATERWORKS

Only two modern waterworks systems are operating in Chekiang, one in Hangchow and the other in Ninghsien. A brief description of each follows.

HANGCHOW WATERWORKS

The idea of constructing waterworks in Hangchow was first considered in 1928, and the undertaking completed in 1931. The cost of construction, partly provided by the Provincial Treasury, partly from a public loan raised, and partly from secured mortgages, amounted to $1,507,009. The Provincial Treasury subsidy was $215,939, and the proceeds of the loan amounted to $747,353. As the original intention was to float a loan of $2,000,000, and the sum actually raised was about only one-third of this amount, an arrangement was made with the local banks to make up the total actually needed with a mortgage of $467,875.

Due to the high salt content in the water obtained from the Tieh Sha River (貼沙河), which is the temporary source of supply for the Hangchow waterworks, a plan was made to build a reservoir at Li An (理安), near Hangchow, on completion of which a reserve of from four to five million gallons of water can be stored.

The site of the waterworks is outside the Tsing Tai Men Gate (清泰門), on the bank of the Tieh Sha River, and covering an area of 97 *mou*. The plant is equipped with four pumps, and the total motive power is 400 h.p. A reservior has been built on Tze Yang Hill (紫陽山) with a capacity of about 600,000 gallons.

From 500,000 to 600,000 gallons of water are daily supplied to a total of over 300 households. Charges are made according to the quantity of water consumed, the rates being as follows:

Cubic Metres	Charge
Under 5	$1.20 per month
5–25	0.28 „ cubic meter
26–50	0.26 „ „ „
51–100	0.23 „ „ „
101–250	0.20 „ „ „
251–500	0.16 „ „ „
501–1,000	0.12 „ „ „
Over 1,000	By arrangement.

The majority of the Hangchow populace get their water supply from wells, of which there are 4,842 used for drinking purposes, 4,406 or 91 per cent being private, and 436, or 9 per cent, public wells.

NINGHSIEN WATERWORKS

The Tung Chuan Yuan Waterworks (通泉源自來水廠), located at Ta Chi Tou (大池頭), were opened in 1915, a group of local merchants forming a company with a capital of $100,000, of which $47,700 is paid-up. The works cover about two *mou*, and are equipped with four pumps and two engines, generating 38 h.p.

Water is charged for according to the number of persons in a household, based in a rate of $0.007 per capita per day. Families of less than five persons are charged for that number. The amount of water supplied annually is 1,825,000 piculs of 1,140 catties each, charges for which amount to $9,600.

BOOK THREE
LEADING CITIES

CHAPTER I

GENERAL DESCRIPTION

IN CHEKIANG Province there are 75 *hsien*, containing 1,050 towns and villages. *Hsiens* with a population of over 500,000, have an average of 29.12 towns and villages, while those with less than 100,000 population have only 7.30, the relative proportions being as follows:

Population	Hsien	Towns and villages	Average towns in Each Hsien
Below 100,000	13	95	7.30
100,000 to 200,000	19	149	7.84
200,000 to 300,000	20	279	13.95
300,000 to 400,000	7	98	14.00
400,000 to 500,000	7	167	23.85
Over 500,000	9	262	29.12
Total	75	1,050	——

The principal cities in Chekiang are Hangchow, Ninghsien, and Yungchia. In order of importance in their trade relations with Shanghai, the 75 *hsien* districts of Chekiang province may be divided into four groups: (1) Hangchow Economic District comprising of 21 *hsien*, namely: Hangchow, Yühang, Linan, Yüch'ien, Ch'anghua, Fuyang, Hsinteng, Fenshui, T'unglu, Chienteh, Shunan, Shuian, Hsiaoshan, Chuchi, P'ukiang, Iwu, Tungyang, Chinhua, Wui, Yungk'ang, and Hsuanp'ing; (2) Ningpo Economic district, of 6 *hsien:* Ninghsien, Ts'uch'i, Fenghua, Chenhai and Yüyao, (3) Yungchia Economic district of 16 *hsien:* Yungchia, Lots'ing, Yühuan, Juian, P'ingyang, T'aishun, Ts'ingt'ien, Lishui, Chinyun, Sungyang, Suich'ang, Chingning, Yunho, Lungch'uan, and Ch'ingyuan, (4) Chia-Hu Economic district of 13 *hsien:* Chiahsing, Chiashan, P'inghu, T'unghsiang, Ts'ungteh, Haining, Haiyen, Wuhsing, Ch'anghsing, Tehts'ing, Wuk'ang, Anchi and Hsiaofeng. Details are as follows:—

	Hsien	Sq. Li	Population
Hangchow District	33	132,454	8,047,254
Ningpo District	11	50,737	4,532,349
Wenchow District	15	88,540	3,775,730
Chia-Hu District	13	30,528	3,168,952
Hsiangshan	1	3,288	210,402
Tinghai	1	3,695	383,739
Nant'ien	1	739	21,922
Grand Total	75	309,981	20,140,348

	Towns	Average Towns in Each Hsien	Average Area of Each Town (Sq. Li)	Average Population of Each Town
Hangchow District ..	404	12.24	327.85	19,918
Ningpo District	267	24.27	190.02	16,975
Wenchow District ..	175	11.67	505.94	21,576
Chia-Hu District	175	13.46	174.42	18,108
Hsiangshan	10	10.00	328.80	21,040
Tinghai	13	13.00	121.50	3,654
Nant'ien	6	6.00	283.03	29,518
Grand Total	1,050			

Exports from and imports to Chekiang Province pass mainly through three cities, Hangchow, Ningpo, and Yungchia. According to 1931 statistics, Hangchow ranks first in handling inward and outward trade, as shown in the following table:—

	Inward	Outward	Excess of Imports
Hangchow	$110,920,312	$58,924,093	$51,996,219
Ningpo	47,344,000	21,500,798	25,843,202
Yungchia	18,115,209	18,197,415	9,917,794

Both in commerce and industry Hangchow ranks first in development. The ratio of commercial establishments compared with industrial enterprises in Hangchow is 100 to 17, and in regard to capital invested the proportion is 100 to 93. In Ningpo the proportion between commercial and industrial enterprises is 100 to 48, while for capital the ratio is 100 to 31. The following table shows the relative positions held by the three leading cities in commerce and industry:

	Commerce		Industry		Commercial Ratio Between Cities	
	Establishments	Capital	Establishments	Capital	Establishments	Capital
Hangchow	10,918	$10,819,787	1,849	$10,097,576	100	100
Ningpo	5,331	9,951,368	257	3,310,450	45	92
Yungchia	2,127	1,693,500	632	1,098,350	19	17

	Industrial Ratio Between Cities		Ratio Within Cities		Capital Ratio Within Cities	
	Establishment	Capital	Commercial	Industrial	Commercial	Industrial
Hangchow	100	100	100	17	100	93
Ningpo	14	31	100	48	100	31
Yungchia	34	11	100	29	100	65

In regard to industry, the ratio between manufacturing establishments and handicrafts in Hangchow is 100 to 722, with a capital ratio of 100 to 85. In Ningpo the proportion between manufacturing establishments and handicrafts is 100 to 149, and for capital the ratio is 100 to 19. The following table shows the relative positions held by Hangchow, Ningpo, and Yungchia in the number of establishments and capital:

	Manufacturing Concerns		Handicrafts		Ratio of Establishments	
	No.	Capital	No.	Capital	Manufacturing	Handicraft
Hangchow	226	$9,723,810	1,632	$823,766	100	73
Ningpo	103	2,619,700	154	510,750	149	100
Yungcia	77	656,175	555	442,175	100	721

	Capital Ratio		Ratio Between Cities		Capital Ratio Between Cities	
	Manufacturing	Handicraft	Manufacturing	Handicraft	Manufacturing	Handicraft
Hangchow ...	100	85	100	100	100	100
Ningpo	100	19	45	9	27	62
Yungchia	100	64	34	34	7	54

CHAPTER II

HANGCHOW

HISTORICAL SKETCH

ACCORDING to the book of Emperor Yü (禹貢) Hangchow was originally part of Yangchow (揚州) but during the Chou Dynasty was part of the State of Yueh (越) and later was incorporated in the State of Chu (楚). In the Chin Dynasty this area was made into Chientang *hsien* (錢塘縣) of the province of Kui Chi (會稽), and became part of the province of Wu during the later East Han Dynasty. At the time of the Three Kingdoms two *hsien* district were created out of this region, Chientang and Yenkuan (鹽官) which were combined into Hangchow in the Sui Dynasty. During the Ming and Ching dynasties Hangchow was again separated into two *hsien* under the name of Chientang and Jenho (仁和) but were united again as Hangchow on the establishment of the Republic.

The incorporation of Hangchow as a municipality was first effected after the Revolution, when the Police and Public Works bureaux were established, but the Hangchow Municipality did not come into existence until 1927, when bureaux of Finance, Public Works, Public Safety, Education, Public Utilities, and Public Health were inaugurated In April the same year, owing to financial difficulties, the Finance, Education, Public Utilities and Public Health Bureaux were abolished, and in their stead three departments were organised, Finance, Education, and Industry and Commerce under the Municipal Government. In April, 1928, increasing activities of the Finance Department necessitated being formed into a separated bureau, and in September, following the reorganization of the Municipality by order of the Central Government, the General Affairs Department became the Secretariat while Commerce and Industry Department was turned into the Department of Social Affairs. In March, 1929, two addi-

tional Departments were created, Land and Public Health. In May, 1930, as a result of the city-planning principles embodied in the regulations governing the creation of the municipality, Hangchow was divided into 13 sections. In order to reduce expenses, the Land and Public Health Departments were abolished, the functions of the former being taken over by the Finance Bureau, while those of the latter were transferred to the Secretariat. The present organization of Hangchow Municipality consists of the following six departments—Secretariat, Finance, Social Affairs, Public Works, Education, and Public Health.

CLIMATE AND TOPOGRAPHY

The average maximum temperature recorded at Hangchow is 38.92° and the lowest, 0.55° Centigrade. The rainfall is highest in July, and lowest in December. The following table shows the temperatures and rainfall recorded at Hangchow during 1931:—

	Maximum Temperature (Centigrade)	Minimum Temperature (Centigrade)	Rainfall (mm.)	Rainy Days.
January	7.34	0.55	60.9	15
February	6.00	2.90	199.2	15
March	15.14	5.97	86.6	15
April	13.60	9.40	174.7	12
May	26.80	18.80	266.0	19
June	30.00	28.66	129.6	10
July	38.92	23.65	348.4	17
August	33.36	24.75	118.6	8
September	26.50	19.96	252.0	12
October	23.62	12.62	81.3	6
November	17.37	92.00	97.7	10
December	10.56	2.79	46.9	14

Hangchow, the provincial capital of Chekiang, lies in latitude 30° 14″ N. and longitude 120° 8″ E. and is situated on the northern bank of the Chientang River. The city is about 26 kilometres wide from east to west, and 30 kilometres from north to south, covering an area of 650 sq. *li*. The north-western district is hilly, Tienmushan (天目山 being the highest peak, while the north-eastern part, with

the famous West Lake in the centre, lies along the Chientang River, the inlet of all streams in the *hsien*.

The important rivers passing Hangchow are the Chientang, Shangt'angho (上塘河), Hsiat'angho (下塘河), Grand Canal, and Chengho (城河). The Chientang, flowing from Fuyang to Chikou (溪口), via Luhot'a (六和塔), Kanhait'ang (桿海塘), Chakou (閘口), is about 40 *li* in length and 4 *li* in width. The Chengho has five tributaries—the Shangho (上河), Chungho (中河), Hsiaho (下河) Hsiho (西河) and Tiehshaho (貼沙河).

Radiating from Tienchu (天竺), the Tienmu hills extend as follows: east, Chipanshan (棋盤山), Tienmashan (天馬山), Nankaofeng (南高峯), Sant'aishan (三台山), south, Paiyunfeng (白雲峯), Ssutsufeng (獅子峯), Wuyunshan (五雲山), to the east of the latter are Tat'oushan (大頭山), Pets'ushan (不慈山), Yühuang shan (玉皇山) Ts'inglungshan (青龍山), Chiuyaoshan (九曜山), Nanp'ingshan (南屏山), Chiangt'aishan (將台山), Fenghuangshan (鳳凰山) and Wushan (吳山); north, Peikaofeng (北高峯), Shantsushan (扇子山), Yüchuanshan (玉泉山), P'aot'aishan (炮台山), Ch'int'ingshan (秦亭山) and Laohoshan (老和山). Among these hills the highest is Peiyunfeng, 471 metres.

POPULATION AND AREA

Hangchow has been a very populous city since ancient times, and as early as the Tang Dynasty had a population of 100,000, which was doubled by the beginning of the Sung Dynasty, but slightly decreased during the Ching Dynasty. Since the establishment of the Republic population increased to 380,031 in October, 1927, and to 524,012 in February, 1933. The following table shows the population of Hangchow during a period of seven years ending February, 1933:—

1927	October	380,031
1928	December	451,147
1929	December	474,228
1930	December	506,930
1931	December	523,569
1932	June	529,862
1933	February	524,012

With the expansion of population, land values in Hangchow have increased considerably. According to statistics compiled by the Hangchow Municipality in 1930, the highest price per *mou* was $40,000. General details are shown in the following table:

	No. of Plots Sold	Highest Rate Per *Mou*
City District	31	$40,000
(old)		
No. 1	6	40,000
No. 2	5	8,000
No. 3	6	15,000
No. 4	3	30,000
No. 5	5	4,350
No. 6	6	8,000
West Lake District		
(old)	3	10,000
No. 7	3	10,000
Kiangkan District		
(old)	4	16,000
No. 8	4	16,000
Huipao District		
(old)	3	2,000
No. 9	3	2,000
Kaotang District	10	5,000
No. 10	7	5,000
No. 11	3	200
Hushü District		
(old)	7	8,000
No. 12	4	8,000
No. 13	3	8,000

The old city district ranks first in regard to land values, followed by the Kiangkan and West Lake districts, while Hushü, Huipao and Kaotang districts rank next, the respective density of population being as follows:

	Mou	Population	Density per 100 *mou*
City District	19,627	325,756	1,659
West Lake District	70,103	48,189	69
Kiangkan District	13,907	37,002	266
Huipao District	24,649	16,704	68
Kaotang District	184,340	73,970	40
Hushü District	38,712	28,421	73
Total	351,838	530,042	2,175

As seen from the above table, land values in Hangchow increases proportionately with the density of population. In 1913 the Land Department of the Municipality classified land values as follows for property offered for sale:—special class, $1,500 per *mou*; 1st class, $1,000; 2nd class $800, 3rd class, $600, and 4th class, $300. Six years later it was found that less than half the total area available for sale had been disposed of, and in order to encourage buyers 30% discount was allowed on each purchase. By following this policy the ground offered was all sold by 1920, since when land value have increased considerably. According to statistics compiled in 1930, land near Yenling Road (延齡路) fetched a price of $30,000 per *mou* while near Pinghai Road (平海路) the price per *mou* was about $8,000. This tremendous increase in land values is attributable largely to the rapid expansion of the city's population.

Outside this allotted area values increased substantially. For instance, land near Sanyuanfang (三元坊) and Tsinghofang (清河坊), formerly fetching $4,000 a *mou*, was worth about $30,000 in 1930, while at other places values showed the same rapid expansion.

Among the city sections the most flourishing was Hsinming Road (新民路) and vicinity. Twelve years ago the price of land in this section was only $2,000, but after the highway traversing it was completed, increased to over $10,000 per *mou*.

COMMUNICATIONS

Hangchow is favoured with excellent communication facilities by water and land. The Chientang River and Grand Canal provide good links while on land the Shanghai-Hangchow-Ningpo railway, Hangchow-Kiangshan railway, and many good highways link important cities in Chekiang province and those of neighbouring provinces.

Railway.—The two important lines serving Hangchow are the Shanghai-Hangchow-Ningpo railway and Hangchow-Kiangshan railway. The former, 355 kilometres long,

has 39 stations on the line, but the section between Tsao-ê-kiang (曹娥江) and Hangchow has not been opened to traffic. The rolling-stock includes 40 locomotives, 150 passenger-cars, and 441 freight-cars. The stations located within city limits are Chakou (閘口), Nanhsingchiao (南星橋), Kienchiao (筧橋), Kenshanmen (艮山門) and Kungchenchiao (拱宸橋). The Hangchow-Kiangshan railway passes Hsiaoshan, Chuchi, Iwu, Chinhua, Lanch'i, T'angch'i, Lungyu, Ch'ühsien, and covers a distance of 351 kilometres. The section between Hangchow and Lanch'i, a distance of 197.8 kilometres, has been open to traffic with 20 stations.

Highways.—The principal roads radiating from Hangchow are the Nanking-Hangchow, Hangchow-Shanghai, Hangchow-Fuyang, and Hangchow-T'angch'ichen (塘棲鎮) highways. The section of the Nanking-Hangchow highway within city limits extends from Pengkungling (彭公嶺) to Chiapu (夾浦), a distance of 137.19 kilometres, along which 43 omnibuses are running regularly. The section of the Shanghai-Hangchow highway within Chekiang limits is 139.5 kilometres long, linking Chinssuniangchiao (金絲娘橋) and Hangchow via Haining, Hsintsang (新倉), Huangwan (黃灣), Haiyen, Chapu (乍浦), a bus service being maintained with 15 vehicles. The Hangchow-Fuyang highway, 38.5 kilometres, links Wulinmen (武林門), Luhot'a (六和塔), and Kaoch'iao (高橋) while the Hangchow-Yüyao highway, 28.22 kilometres, passes Sungmuch'ang (松木場), Kutang (古蕩), and Liuhsia (留下). The Hangchow-T'angch'ichen highway links Ts'ingt'aimen (清泰門), in Hangchow, and T'angch'i-chen, via Ch'iaossu (喬司), Chaoshan (超山), Linp'ing (臨平), a distance of 43.39 kilometres. Regular bus services are maintained on these roads.

Waterways.—The most important channels serving Hangchow are the Chientang River, Grand Canal, and Shaoch'i River (苕溪河), upon which regular steam-launch and junk services are maintained, as shown in the following table:—

	Distance (*li*)	Route	Service
Hangchow-T'unglu	146	Chientang River	Launches and
Hangchow-Ch'uch'i	117	„ „	Junks
Hangchow-Soochow	320	Grand Canal	„ „
		Shaochi River	„ „
Hangchow-Wuhsing	180	„ „	„ „
Hangchow-Shanghai	450	Grand Canal	„ „
Hangchow-Hsinshih	108	„ „	„ „
Hangchow-T'angch'ichen	45	„ „	„ „
Hangchow-P'ingyao	66	Shaochi River	Junks
Hangchow-Yühang	67		„
Hangchow-Ch'anghsing	81	Shaochi River	„
Hangchow-Lanch'i	294	Chientang River	„
Hangchow-Weiping	409	„ „	„
Hangchow-Shentu	630	„ „	„
Hangchow-Chūhsien	430	„ „	„

The service on the Chientang River is conducted by three companies, employing 16 launches, while on the Grand Canal and on the Shaochi River service is maintained by 9 companies, operating 25 launches. In addition there are about 150 junks in these waters. According to Hangchow Customs reports, steamers and junks entering Hangchow and vicinity in 1922 totalled 5,511, but decreased in 1931 to 2,313 as shown in the following table:—

	Launches		Junks		Total	
	No.	Tonnage	No.	Tonnage	No.	Tonnage
1922	1,760	111,921	3,751	110,575	5,511	222,496
1923	1,652	104,117	4,441	130,165	6,093	234,282
1924	1,536	117,946	1,767	55,130	3,303	173,076
1925	1,473	107,154	1,630	50,935	3,103	158,089
1926	1,646	122,975	3,445	98,725	5,091	221,700
1927	1,092	103,259	3,439	110,005	4,531	213,264
1928	1,946	130,341	2,675	88,160	4,621	218,501
1929	2,194	133,105	2,188	65,125	4,382	198,230
1930	2,262	150,857	3,206	91,625	5,468	242,482
1931	1,504	104,862	809	21,605	2,313	126,467

Mail Service.—In Hangchow there is one Postal Administration office, 8 branch offices, 10 rural collection-boxes and 134 city collection-boxes.

Telegraph and Telephone Services.—The telegraph service in Hangchow is operated under the auspices of the Ministry of Communications, serving 13 different routes,

with an annual revenue of over $60,000. Telephone services are available in Hangchow for either local or long-distance communication. There are five branch offices, serving 2,401 subscribers, of which 53.03 per cent are business houses, 24.40 per cent private residences, 15.28 per cent. offices, with 11.16 per cent representing miscellaneous connections. In 1916 the households using telephones totalled only 820, increasing to 2,140 in 1931. The long-distance service was opened in 1929, with a total length of trunk-lines of 5,014 *li*.

COMMERCE

Being the provincial capital, commercial activities in Hangchow have been growing steadily. There are 10,918 business firms operating in the city, with an aggregate capital amounting to over $10,000,000. In 1931 the total capital turnover amounted to about $116,000,000, of which the silk trade contributed the largest share, $13,351,600. The number of firms in the silk business totalled 203, capitalized at $855,800. Rice businesses number 222, capitalized at $504,440, with a turnover of $9,662,675. Concerns handling timber numbered 95, capitalized at $184,800, with a turnover of $5,853,350. Sundry stores numbered 17, capitalized at $449,000, with a turnover of $178,120. Raw and artificial silk dealers totalled 49 and 33, capitalized at $57,300 and $9,400 respectively their turnover being $1,989,600. The following table shows particulars of the business concerns operating in Hanchow:

	No.	%	Capital	%	Annual Turnover	%
Clothing	1,694	15.5	$2,331,290	21.5	$28,077,781	23.9
Foodstuffs	3,876	35.4	3,728,743	34.4	49,339,762	40.2
Household supplies	1,652	15.1	1,441,272	13.4	11,527,670	9.7
Fuel	353	3.3	293,900	2.7	3,163,700	2.7
Medical supplies	587	5.4	755,946	7.0	4,610,730	3.9
Educational supplies	411	3.8	593,280	5.5	7,344,250	6.3
Miscellaneous	1,844	16.9	843,791	7.8	6,943,201	5.9
Brokerage business	501	4.6	831,565	7.7	8,587,616	7.4
Total	10,918	100	$10,319,787	100	$119,594,710	100

Most of the business concerns in Hangchow are organized as individual private enterprises, with a few partnerships. Establishments opened since 1928 lead in number, followed by those established between 1912 and 1927, while those dating back prior to 1912 are the least in number. According to birthplaces, the Shaohsing group of merchants is the most influential, followed by the Hangchow group, while the Ningpo group ranks third.

Statistics relating to Hangchow trade obtainable from two sources, the Customs returns and railway records. Prior to the opening of the railway transport of freight mainly depended on the Grand Canal, and Hangchow was the main centre of distribution for goods from Kiangsu, Anhui, and Kiangsi, but after the railway was opened goods from Shanghai, Shaohsing, and Hsiaoshan were carried by rail, with Nanhsingchiao (南星橋) and Chakou (閘口) the main distributing centres, and Kenshanmen (艮山門), Chienchiao (筧橋) and Kungpu (拱埠) next in importance. The following table shows details of the trade of Hangchow during 1931:—

	Inward (Hk. Tls.)	Outward (Hk. Tls.)
Domestic goods	4,091,520	11,109,857
Imported goods	3,332,484	——

RAILWAY FREIGHT HANDLED

	Inward	Outward
Chakou (閘口)	$72,683,280	$16,505,471
Nanhsingchiao (南星橋)...	10,656,400	3,805,700
Chengchan (城站)	14,632,160	10,724,800
Kungpu (拱埠)	815,500	7,627,075
Chienchiao (筧橋)	449,336	2,523,200
Kenshanmen (艮山門)....	137,038	428,690

Taking the Haikuan tael as equal to $1.558, the inward trade of Hangchow amounted to $110,920,312 and outward to $58,924,093, an excess of "imports" of $51,996,219. Among inward traffic borne by rail pet-

roleum, cigarettes, artificial silk, cotton yarn, and salted fish are the most important items, while satin, tea, and raw cotton take the lead in outward trade. Imported goods entering Chekiang through the Hangchow Customs consist mainly of sugar and cotton piece-goods, while among domestic products cigarettes, cereals, and native tobacco head the list. Exports through the Hangchow Customs consist mainly of tobacco and silk and satin goods.

Hangchow is not only a commercial centre but is also the principal financial centre for Huichow (徽州), Anhui province and Shangjao (上饒), Kiangsi province. There are 26 modern banks operating in Hangchow, of which 11 are branches of financial houses established elsewhere, and the resources of the banks in Hangchow total about $39,000,000. Native banks in Hangchow are classified as *ta tung hang* (大同行) and *hsiao tung hang* (小同行), the former numbering 17 and the latter 23, both being members of the Native Banks Guild. Next in importance are small banks and cash-shops which are not the members of the Native Banks Guild, 25 in number.

INDUSTRIES

Industries in Hangchow may be grouped into factory and handicraft enterprises. The former include the manufacture of satin, matches, cotton weaving and reeling, leather, glass, and dye-works, nickel-plating, iron-works, shipbuilding, rice-milling, etc., totalling 226 concerns, capitalized at $9,723,810 and employing 10,814 workers, particulars being as follows:

	No.	Capital	Workers
Silk weaving	17	$334,000	1,993
Cotton weaving	9	2,081,000	2,892
Silk reeling	3	367,660	901
Match	1	500,000	1,493
Water supply	1	2,500,000	86
Power plant	1	3,000,000	308
Stone grinding	1	30,000	130
Sawmills	2	5,000	22
Ironworks	11	230,400	595
Shipbuilding	6	28,000	150

	No.	Capital	Workers
Candy sugar	2	$26,000	51
Rice-mills	105	103,000	592
Soy and vinegar	4	25,000	27
Can making	1	2,000	8
Artificial ice	1	5,000	8
Condensed milk	1	70,000	32
Tung oil mills	1	20,000	5
Coal-briquette factory	6	18,200	39
Leather-works	4	19,000	63
Braiding-works	4	1,600	24
Glass-works	2	75,000	175
Dye-works	13	36,600	221
Nickel plating	8	6,350	103
Stone powder mills	1	13,000	29
Shuttle-making	2	34,000	59
Face-powder factories	1	500	6
Printing-works	18	192,500	712
Total	226	$9,723,810	10,742

Minor industrial enterprises number 1,623, and include the making of knitted goods, towels, silk thread, shoelaces, cotton thread, leather goods, "joss" money, cloth and paper umbrellas, straw hats, cutlery, etc., capitalized at $823,766 and employing altogethr about 40,000 persons. Contractors number 323, with a capital of $799,230 and employing 13,500 workers. The following table shows details of the minor industries of Hangchow:—

	Works	Capital	Workers
Knitting	16	$40,600	182
Towel-making	4	6,400	59
Fiddlestring	2	2,500	5
Shoelaces	1	700	6
Cotton thread	1	500	2
Stone-breaking	15	2,680	86
Lime-burning	3	5,500	155
Leather goods	20	34,800	155
Soap-making	6	37,900	69
Dye works	107	61,280	610
Candle-making	2	10,800	15
Calcium	1	3,000	11
Saltpetre	7	3,500	55
Ironworks	75	52,801	448

	Works	Capital	Workers
Dry batteries	2	1,500	8
Tinfoil	430	418,000	34,750
"Joss" money	132	12,000	932
Noodles	16	13,000	60
Artificial ice	5	10,300	36
Bottled vegetables.....	2	2,500	6
Wood works	600	10,000	2,000
Oil paper	30	7,500	153
Gold and silver foil	15	3,770	104
Cloth umbrellas	5	5,700	44
Straw hats	8	10,300	47
Cutlery	33	3,500	112
Shuttle-making	5	1,250	8
Cotton yarn	4	1,300	23
Paste	4	1,900	5
Lamp shades (shell)	3	1,800	12
Tobacco (water) pipes ..	1	1,500	10
Printing	59	27,785	208
Photograph mounts	11	1,700	28
Contractors	323	799,230	13,500
Others	16	23,500	377
Total	1,964	1,620,996	54,281

The ratio between factory and minor manufacturing establishments is 100 to 722, and that of capital 100 to 85. One point worth notice is the fact that several mercantile business have been converted into manufacturing enterprises. Hosiery was originally purely a retail business, but has become an important industry, knitting factories being found everywhere. Prior to the establishment of a local factory silk braid was imported from Japan, but in 1913 the Cheng Hsing (承興廠) and Hsing Yeh (興業公司) started making braid, and by 1927 nine factories were engaged in this business, with a total annual turnover of $50,000, but owing to the slump in silk weaving, only four braid factories are now working. Shoelaces were formerly imported from Japan but since the Manchurian incident in September, 1931 and the Japanese hostilities in Shanghai in 1932 a factory has been established to manufacture shoelaces, and the import of Japanese supplies has stopped.

CHAPTER III

NINGPO

NINGPO was known during the Tang Dynasty as Ming-chow (明州), but was subsequently called Ssuming (四明), from the surrounding Ssuming hills. It was one of the first ports opened to foreign commerce, for as far back as the Sung dynasty (A.D. 960-1280), during the reign of T'ai Tsung (太宗, A.D. 976-998), a special institution, *shih po ssu* (市舶司) was established by Imperial order to control and protect foreign residents in eastern Ningpo and superintend business relations between Chinese and foreigners. With the removal of the Sung capital from Kaifeng, Honan, to Hangchow, Ningpo was brought much nearer the seat of government, and the population grew rapidly. As time went on the city was visited by an increasing number of foreigners, including Marco Polo, and gradual development steadily continued. By the Treaty of Nanking (August 29, 1842), Ningpo was made a treaty port.

Since the establishment of the Republic in 1912 many attempt were made to reorganize the city government into a municipal administration, but without success until 1927. The Ningpo Municipality then included the city proper, the western, southern and northern suburbs, and the area south of the Yung River (甬江) and north of the Yao River (姚江), altogether covering 127 square *li*, with a population of more than 210,000. In January, 1931, however, the Municipality was dissolved by the Chekiang Provincial Government owing to financial difficulties, and Ningpo is at present under the *Hsien* Government of Ninghsien.

LOCATION AND POPULATION

Ningpo is located in longitude 121° 32' E. and latitude 29° 52' N., bound on the south by Fenghua, on the west by Yüyao, on the north by Ts'uch'i, and on the east by Chenhai. The city extends about 160 *li* from east to west,

and 70 *li* from south to north. The whole district covers an area of 4,135 square *li*, with two ranges of hills running east and west. The former is generally known as Chin-ê-shan (金娥山), starting from Fenghua, separating into two forks at Ningpo, one running northeast to Hsishan (西山), and the other eastward to Paiyenshan (白嶚山), where the range again divides, forming a large number of hills. In the west hills is the well-known Ssuming range, starting at Yüyao and branching in two directions from Ningpo.

Ningpo is abundantly provided with facilities for water transportation. The Yung River (甬江) and Ning Rivers (鄞江) are the two most important streams passing through the district, the former starting from Ts'uch'i and joining the Ning River at Hsinchiangchiao (新江橋), whence it runs northward into Chenhai. This last section is called Tachiehkiang (大浹江). The Ning River, rises in Fenghua, traverses in the southern suburbs of Ningpo, and then joins the Yung River. In addition to these two main waterways, there are innumerable smaller streams, among which may be mentioned the Ch'ient'angho (前塘河), Chungt'angho (中塘河), Hsint'angho (新塘河) and Hout'angho (後塘河)—these being woven into a wide network of navigable waters which are mainly responsible for the prosperity of Ningpo.

The city has a temperate climate, with a very heavy rainfall in May, as shown in the following table:—

	Amount of Rainfall (Millimetres)	Maximum Temperature (Centigrade)	Minimum Temperature (Centigrade)
January	54.50	21	–9
February	153.70	18	–1
March	75.70	26	1
April	115.40	27	8
May	247.50	29	10
June	82.50	33	16
July	147.00	34	21
August	155.00	34	20
September	204.30	30	16
October	14.50	29	6
November	136.30	22	06
December	69.40	19	–4.5

An investigation made in 1931 put the total population of Ningpo at 741,280, in 172,350 families, the number of males being 333,580 and females, 407,700. The rural population is 497,131, distributed among 124,416 families. On the basis of a total area of 3,857 square *li*, the density per square *li* in country districts is approximately 129. In the city, which covers an area of 149 square *li*, there are 244,151 persons, constituting 48,134 families—about 1,634 inhabitants to the square li. City residents are mostly merchants and industrial workers, the former being generally natives, while the latter come mainly from Shaohsing, Yungchia, and T'ient'ai.

LAND VALUES AND HOUSE RENTS

According to an estimate based upon land registration, the former Ningpo Municipality covers altogether 56,113 *mou*, divided into ten sections, of which the sixth and seventh sections command the highest prices averaging $70,000 per *mou*. Details are shown in the following table:—

Section	Area (*mou*)	Registered Land (*mou*)	Maximum Price (per *mou*)	Minimum Price (per *mou*)
I	5,937	1,972	$2,000	$53
II	5,060	2,231	40,000	40
III	13,026	5,142	4,000	28
IV	8,109	3,016	13,500	30
V	11,536	3,670	1,200	30
VI, VII	5,982	3,753	70,000	35
VIII	1,843	1,474	16,000	140
IX	2,568	2,281	12,000	70
X	2,052	1,589	25,000	500

Land values in Ningpo are much higher than in Hangchow, where the best sites fetch about $40,000 per *mou*. Accordingly, house rent in the former city rises much faster and higher than in the latter. While in Hangchow the rent of a house rarely exceeds $40, good houses in Ningpo are worth more than $100 a month. The following shows the rents generally prevailing in Ningpo;—

MONTHLY RENTAL	SHOP PREMISES			
	Occupied by Owners		Rented	
	No. of Houses	Total Rent	No. of Houses	Total Rent
Under $10	1,534	$6,773.88	3,580	$15,805.72
11–20	238	3,634.89	555	8,481.41
21–50	426	16,231.73	205	7,815.27
51–100	50	3,368.57	174	11,943.13
Above $100	15	2,242.38	51	7,507.12
Total ..	2,263	32,251.45	4,565	51,552.65

MONTHLY RENTAL	RESIDENCES			
	Occupied by Owners		Rented	
	No. of Houses	Total Rent	No. of Houses	Total Rent
Under $10	3,198	$14,185.00	4,798	$21,302.60
11–20	354	5,306.20	531	7,959.30
21–50	127	3,840.16	190	5,760.24
51–100	13	803.88	19	1,205.82
Above $100	4	650.00	——	——
Total ..	3,696	24,785.24	5,538	36,227.96

The price of good arable land ranges from $15 to $200 a *mou*, and that of hilly land from $12 to $40. Marshland fetch a comparatively low price, ranging between $5 to $20 per *mou*.

TRANSPORTATION AND COMMUNICATIONS

Ningpo is well provided with railway, water and bus transportation. The Ningpo-Tsaoêkiang section of the Shanghai-Hangchow-Ningpo railway provides a link between the city and Shaohsing, passing through such important cities as of Ts'uch'i, Yüyao, Shushan (蜀山) and Chang-t'ing. (丈亭). It is only a day's journey from Ningpo to Hangchow, between which cities and Shaohsing regular bus services are maintained.

A motor-bus service runs between Ningpo and Fenghua, and to Chenhai and Ts'uch'i, and for water transport the Yung, Ning, and Yao rivers connect the city respectively with Chenhai, Fenghua and Yüyao, tributaries running in all directions into the various suburbs. Seagoing steamers carry thousands of passengers and tons of freight between the large coastal ports, such as Yungchia, Haimen, Hsiangshan and Tinghai. The prosperity of the shipping industry is revealed by the large number of steamships in operation as follows:—

Service	Ships
Ningpo-Taishan	1
Ningpo-Haimen	1
Ningpo-Yungchia	5
Ningpo-T'ient'ai	1
Ningpo-Juian	3
Ningpo-Yüyao	2
Local	35
Ningpo-Tinghai	1
Ningpo-Shanghai	6
Ningpo-Ninghai	2
Ningpo-Chenhai	3
Ningpo-Huangyen	2
Ningpo-Fenghua	1

Practically all the shipping offices in Ningpo are located on the Bund and outside the city wall in the eastern, western and southern suburbs. The S.S. Hsin Ning Shao (新甯紹), of the Ningpo Shaoshing S.N. Co. (甯紹輪公司), and S.S. Hsin Kiangtien (新江天), of the China Merchants S.N. Co. are the two largest vessels sailing between Ningpo and Shanghai, having respectively 3,500 and 600 horse power. The latter leads in loading capacity (3,675 tons), nevertheless, though is of comparatively small motor power. The steamship Hsin Pao Hua (新寶華) of the Pao Hua S.N. Co. (寶華商輪公司) is the largest vessel on this run, with a cargo capacity of 1,054 tons. The following table gives particulars of the various lines:—

Company	Name of Ship	Service	Principal Ports of Call
San Pei (三 北)	Yaopei (姚 北)	Ningpo-Taishan	Chenhai, Shenchiamen (沈家門), and Puto (普 陀).
" "	Chenpei (鎭 北)	Ningpo-Tinghai	Chenhai, Lungshan (龍 山), and Chuanshan (穿 山).
" "	San Pei (三 北)	Ningpo-Haimen	Chenhai, Hsiangshan, and Shihpu (石 浦).
" "	Ninghsing (寧興)	Ningpo-Shanghai	Chenhai, Puto, and Woosung.
Ningpo-Shaohsing (寧 紹)	Hsin Ning-shao (新 寧 紹)	Ningpo-Shanghai	Chenhai, Puto, and Woosung.
Yung Ning (永 寧)	Yungning (永 寧)	Ningpo-Wenchow	Chenhai, Puto, Shihpu, and Kanmen (坎 門)
Pao Hua (寶 華)	Hsin Pao Hua (新寶華)	Ningpo-Ninghai	Chenhai, Tinghai, Shihpu, Haimen, and Kanmen.
Ning Hsiang (寧 象)	Ninghsiang (寧 象)	Ningpo-Ninghai	Chenhai and Chushan Archipelago.
Hsiangshan (象 山)	Hsin Ninghai (新 寧 海)	Ning-T'ient'ai	Chenhai, Tinhai, Hsiangshan, and Shihpu.
China Merchants	Hsin Kiangtien	Ningpo-Shanghai	Chenhai, Puto and Woosung.
Ninghai (寧 海)	Tunghai (東 海)	Ningpo-Yungchia	Puto, Shihpu, Haimen, Huangyen, and Juian.
"	Nanhai (南 海)	Ningpo-Ninghai	Chenhai, Tinghai, Chüanshan, Shenchiamen, and Taishan.
Lishê (利 涉)	Chenhai (鎭 海)	Ningpo-Chenhai	Meihsü (梅 墟) and Tsingshuipu (清水浦)
"	Chingsheng (景 昇)	Ningpo-Chenhai	Meihsü and Tsingshuipu.
"	Meipu (梅 浦)	Ningpo-Chenhai	Meihsü and Tsingshuipu.

Company	Name of Ship	Service	Principal Ports of Call
Yung Chuan (永 川)	Tinghai (定 海)	Ningpo-Juian	Chenhai, Chushan Archipelago, Shenchiamen and Puto.
" "	Yungchuan (永 川)	Ningpo-Juian	Chenhai, Chushan Archipelago, Shihpu, Haimen, Kanmen, and Yungchia.
" "	Hukuang (滬 廣)	Ningpo-Juian	Chenhai, Chushan Archipelago, Shihpu, and Huangyen.
Butterfield & Swire	Hsin Peking (新北京)	Ningpo-Shanghai	Chenhai and Woosung.
San Fa (三 發)	Lien I (聯 益)	Ningpo-Huangyen	Chenhai, Chushan Archipelago and Hsiangshan.
Fengchuan (來 川)	Shunan (順 安)	Ningpo-Yüyao	———
Hsin Ning Tai (新寧台)	Hsin Ning Hai	Ningpo-Huangyen	Chenhai, Tinghai, Shihmen and Haimen.
Li Yung (樂 甬)	Li Yung (樂 甬)	Lihaoho (裏 澇 河) Hengchangchiao (橫張橋)	Tuantang (段 塘), Lishe (樂 畬) and Peitu (北 渡).
Ta Hsing (達 興)	Hung Hsing (鴻 興)	Ning-Yungchia	Chenhai, Tinghai, Shihpu, Haimen, and Kanmen.
Tung I (同 益)	Shanchang (善 昌)	Hanlingshih (韓嶺市) Mochiyen (莫枝堰)	Taokungshan (陶 公 山) and Hsiashui (下 水).
Hsiaotai (小 岱)	Hsiaotaishan (小 岱 山)	Ningpo-Shanghai	Chenhai, Tinghai, Shenkiamen, and Puto.
Kung I (公 益)	Fumao (福 茂)	Waihaoho (外 澇 河) Tungpenpu (銅 盆 浦)	Tuantang Shihchimiao (石碶廟) and Yentou (堰 頭).
" "	Taishun (泰 順)	———	———

Company	Name of Ship	Service	Principal Ports of Call
Yung An (永 安)	Ningyu (寧 餘)	Chenhai-Fenghua	Tsingshuipu and Meihsü
Kung Chi (公 記)	Kiangli (江 利)	Waihaoho—Hsiwu (西 塢)	Shihchi and Chenpotu (陳 婆 渡)
Yung Chuan (甬 川)	Yungchuan (甬 川)	Waihaoho—Hsiwu	Kiangkou (江 口, Fangchiao (方 橋), and Nantu (南 渡).
Ning Feng Heng Chi (鄞 泰 恒 記)	Ning Feng (鄞 泰)	Waihaoho—Hsiwu	————
Hung Ching Hung Chi (鴻 慶 鴻 記)	Sin Hung Ching (新 鴻 慶)	Waihaoho—Hsiwu	Kiangkou and Touweichiao (斗 尾 橋).
Hsin Ta (迅 達)	Hsinli (迅 利)	Lihaoho-Chienyuteh (前 岙 墟)	Tuantang, Lishê, Tunghsichang (東西場), and Shanghsiawang (上 下 王).
Ning Yung (鄞 甬)	Ningyung No. 3	Lihaoho-Meiyuanshan (梅 園 山)	Huangkulin (黃古林), Shihmatang (石 馬 塘), and Shenchiaolung (蜃 蛟 弄).
" "	Ningyung No. 4	Lihaoho-Ningkiang-chiao (鄞 江 橋)	Tuantang, Peitu, and Tingshanchiao (定 山 橋).
Feng Ho (豐 和)	Hsin Moushan (新 貿 山)	Liaoho-Ning-kiangchiao	Tuantang and Peitu.
" "	Kiangnan (江 寧)	Liaoho-Ning-kiangchiao	Tuantang, Lishê, Peitu, and Tingshanchiao.
Yung Chang (甬 昌)	Yung An (甬 安)	Hsinhotou (新 河 頭) and Hengchi (橫 溪).	Chiangtsun (姜 村) and Chiatsun (甲 村)

Company	Name of Ship	Service	Principal Ports of Call
Yung Chang	Yung Chang (甬 昌)	Hsinhotou—Hengchi and Chiatsun	Shihyentou (石 堰 頭).
Ningnan (鄞 南)	Ningchi (鄞 溪)	Hsinhotou—Hengchi	Sanchiao (三 橋) Chiangtsun, and Yunlungchi (雲 龍 磧).
Yung Nien (永 年)	Tatung (大 通)	Hsinhotou—Mochiyen	Panhochiao (潘 大 橋) and Ssukang (泗 港)
Tung Nan (東 南)	Tunghsing (東 興)	Hsinhotou—Mochiyen	Panhochiao and Ssukang.
Ning Hu (寧 湖)	Ninghu (寧 湖)	Hsinhotou—Mochiyen	Panhochiao and Ssukang.
" "	Huning (湖 寧)	Hsinhotou—Mochiyen	
Ning Tung (鄞 東)	Ningtung (鄞 東)	Tahotou—Tungwu (東 吳) and Shaopai (少 白)	Shengtienchiao (盛 墊 橋), Wuhsiangchi (五 鄉 磧) and Tahanshan (大 淹 山).
Ningshan (鄞 山)	Yungchin (甬 鎮)	Tahotou—Changshanchiao (長 山 橋)	Fumingchiao (福 明 橋), Yangchiao (羊 橋) and Taipingchiao (太 平 橋).
Ling Po (凌 波)	Lingpo (凌 波)	Tahotou—Tungwu	Shengtienchiao, Wuhsiangchi, and Tahanshan.
Mou Chi (鄮 溪)	Ningan (鄞 安)	Tahotou—Tungwu	Tahanshan, Wuhsiangchi, and Shengtienchiao.
" "	Yungan (甬 安)	Tahotou—Paochuang (寶 幢)	Shengtienchiao, Huichienchiao (匯 錢 橋) and Moushanchiao (鄮 山 橋).
" "	Paoan (寶 安)	Tahotou—Paochuang	Shengtienchiao, Wuhsiangchi and Moushanchiao.

Company	Name of Ship	Service	Principal Ports of Call
Hsieh Jen (協 仁)	Hsishan (西山)	Ningpo West Gate—the Thirteen Arch Bridge (十三洞橋)	Kaochiao (高橋), Hsichengchiao (西成橋) and Hochinputou (河靈埠頭).
Ning An (寧 安)	Ningan (寧 安)	Ningpo West Gate—the Thirteen Arch Bridge	Kaochiao, Hsichengchiao and Hochinputo.
Ning Feng (鄞 鳳)	Ning Feng No. 1	Ningpo West Gate—Fengaoshih (鳳 喬市)	Wangchunchiao (望 春 橋) Chishihkang (集 士 港), and Hengchiatou (橫 街 頭).
" "	Ning Feng No. 2	Ningpo West Gate—Fengaoshih	Wangchunchiao, Chishikang and Hengchiatou.
Tao Yuan (桃 源)	Taoyuan (桃 源)	Ningpo West Gate—Hengchiatou	Wangchunchiao, Chishikang and Hengchiatou.
Chien Hu (錢 湖)	Chienhu (錢 湖)	Hanlinshih (韓嶺市)—Mochiyen	Taokungshan (陶 公 山) and Hsiashui.
" "	Hsin Chien Hu (新 錢湖)	Hanlinshih—Mochiyen	Taokungshan and Hsiashui.
San Fu (三 福)		Bund—Meihsü	
Yung Chang (甬 昌)	Kiangchen (江 澄)	Hsinhotou—Taokiang	
Yung Li (甬 利)	Hsinningyu (新 寧 餘)	Ningpo-Yüyao	Meihsü and Nantu
Ting Hsing (定興)		Ningpo—Shanghai	Chenhai and Puto

Vessels entering and clearing the port of Ningpo are of three types, steamers, foreign-rigged sailing vessels and junks. The number of steamships has steadily increased since 1922, while sailing-ships and junks are becoming fewer, as shown in the following table:

	Steamships		Sailing Vessels	
	No.	Total Tonnage	No.	Total Tonnage
1922	1,279	2,134,819	167	20,539
1923	1,347	2,315,109	128	16,254
1924	1,378	2,328,336	95	14,309
1925	1,305	2,154,033	118	17,362
1926	1,418	2,340,374	127	20,249
1927	1,632	2,843,770	98	14,987
1928	1,600	2,920,818	129	19,920
1929	1,505	2,818,333	112	17,583
1930	1,622	2,817,103	80	12,124
1931*	1,800	2,911,981	61	9,198

	Combined Totals		Junks	
	No.	Total Tonnage	No.	Total Loadings (Piculs)
1922	1,446	2,155,358	13,977	7,897,551
1923	1,475	2,331,363	12,019	7,727,693
1924	1,473	2,342,645	10,894	7,234,565
1925	1,423	2,171,395	10,562	7,177,751
1926	1,545	2,360,623	10,047	7,040,341
1927	1,730	2,858,757	9,427	6,638,820
1928	1,729	2,940,738	8,009	5,572,255
1929	1,676	2,835,916	9,559	6,025,172
1930	1,702	2,829,227	7,741	4,825,314
1931*	1,861	2,921,179	2,713	1,889,777

The most common vehicles employed for land transportation consist of automobiles, rickshaws, wheelbarrows, and carriages. There are 16 rickshaw *hong*, operating 1,677 vehicles, and motor-cars number 590 in the city and 67 in the country districts.

With regard to communication services, telegraph and wireless are available and the city telephone system has 1,100 local subscribers, with 16 lines, 450 *li* in length, extending to country districts.

*January—May.

INDUSTRIES

Manufacturing industry is rapidly developing in Ningpo, and many factories make use of steam or electric power, such as spinning, weaving, dyeing, flour, oil, and rice milling, shipbuilding, match-making, etc. A recent estimate puts the total number of modern factories in the city at 103, of which 69 are rice-mills. Of the total capital amounting to $2,620,000 the share of the spinning industry is $900,000. The following table shows further particulars:

	No.	Capital	Workers
Spinning	1	$900,000	1,867
Weaving and dyeing	6	83,000	912
Flour-mills	2	154,000	78
Oil-mills	1	140,000	119
Rice-mills	69	280,000	591
Glass-works	2	40,000	172
Shipbuilding	1	7,000	18
Machine-works	7	33,100	244
Electric supply	1	747,500	84
Water supply	1	47,700	9
Canned goods factories	8	102,600	795
Match-factories	1	60,000	353
Knitting-mills	1	4,000	213
Foundry	1	8,800	12
Cigarette-factories	1	12,000	60
Total	103	$2,619,700	5,527

With regard to minor industries, these include 15 main lines, of which the most important are knitting and the manufacture of furniture, and brass, copper and tin utensils. The making of paint and varnish is an old-established local industry; but it is less important than more newly-developed lines on account of its extremely small scale of operation.

Most of the minor industries are such as in Western countries would involve the use of complicated modern mechanical devices but the factories in Ningpo are operated on an extremely small scale, the work being done by six or seven operatives in one or two small rooms, where old-fashioned Chinese hand-machines are the principal tools used. The methods of manufacture are likewise very crude,

but the aggregate production is of considerable magnitude. The following table shows the number of such factories operated in Ningpo, the nature of their business, amount of money invested, and the number of operatives employed:—

	Concerns	Capital	Operatives
Varnish and Paint	17	$45,700	198
Candy sugar	1	4,000	15
Printing	8	46,500	166
Soap and candles	7	37,200	136
Brass, copper and tin utensils	38	117,100	117
Caldron-making	1	3,000	11
Emery-paper-making	1	800	14
Storage battery	3	2,450	55
Knitting	32	119,100	376
Sauces and essence	1	2,000	6
Flour-milling	1	2,000	8
Mat-making	5	11,000	229
Wood-sawing	1	5,800	8
Furniture-making	37	111,100	396
Umbrella-making	1	3,000	15
Total	154	510,750	1,750

FINANCIAL CONDITIONS

Ningpo is as important an economic centre in Chekiang province as Hangchow, and as in many other places, the native banks still hold a prominent position in business. One special feature of the Ningpo native banks is their transfer system. About 80 years ago, during the period of the Taiping Rebellion, when the city was short of copper coins, the native banks, (which were considered the most reliable financial institutions) were for the first time entrusted with the responsibility of clearing operations, thus greatly minimizing the use of currency in the settlement of accounts between merchants who had transactions with native banks. Instead of paying cash, the debtor went to his bank and request the transfer from his account to that of the creditor of the amount he owed. It was in this way that Ningpo escaped a very serious financial panic during the Taiping Rebellion, and this clearing function of the native banks is still greatly appreciated by the general public, though copper coins have since given way to silver.

The Ningpo money-market is dominated by three influences, the "modern style" banks, native banks, and pawnshops. The first mentioned are branches of Shanghai banks including the Bank of China, Bank of Communications, Ningpo Commercial Bank, Land Bank of China, Mercantile Bank of China, Industrial Bank of China and the Bank of Amoy. In addition there are many Shanghai banks which have Ningpo native banks as their agents. In 1932 all these banks made profits ranging from $51,000 to $60,000. The total amount of bank-notes in circulation was estimated at only about $6,000,000.

Native banks in Ningpo are much more influential than the "modern-style" banks, and are classified in three groups, *ta tung hang* (大同行) or big banks, *hsiao tung hang* (小同行) or small banks, and *hsien tui chuang* (現兌莊), equivalent to the small exchange-shops in Shanghai. *Ta tung hang* have a capital of over $60,000, and are members of the transfer system. Banks with a capital of less than $60,000 belong to the *hsiao tung hang* group, and do not clear orders, while the *hsien tui chuang* are engaged in business which is mere money-changing and the buying and selling of currencies of different localities.

According to a recent investigation there are 117 native banks in Ningpo, 37 belonging to the *ta tung hang*, 30 to the *hsiao tung hang* and 50 to the *hsien tui chuang*, with an aggregate declared capital amounting to approximately $3,600,000. Like native banks in other Chinese cities, all these concerns assume unlimited liability, and consequently, enjoy very good credit. Their influence extends not only to such nearby cities as T'uch'i, Fenghua Chenhai and Yüyao, but also to Shanghai, where they are very active in loan operations.

With regard to pawnshops, there are altogether 24 in operation, of which eight are in country districts. The total investment in this business amounts to $644,000. Formerly they were ranked with native banks as of equal importance in the economic life of the masses, but changed social conditions has made them less significant, and in 1931 they were seriously affected by the silk slump, people pawning silk goods finding it unprofitable to redeem their pledges.

COMMERCE

Exports and imports via Ningpo amounted to $21,000,000 and $47,000,000 respectively in 1930, while the total business turnover, according to a report of the Ningpo Business Tax Bureau, was estimated at $47,836,808 (excluding transactions below $500), distributed as follows:

	No. of Firms	Annual Business Turnover
Clothing	372	$13,899,785
Provisions	821	16,363,356
Hotels and furniture-makers	226	2,579,150
Drugs and other medical goods	241	2,441,820
Fuel	142	1,280,764
Stationery supplies	85	1,532,800
Daily necessities	668	5,487,353
Industrial raw materials	88	4,210,790
Others	19	41,000
Total	2,662	47,836,818

Another estimate, slightly different from the preceding and in which the total capital of firms is given instead of annual business turnover, has been prepared by the Ninghsien Government, a summary of which follows:—

General Classification	Lines Included	No. of Firms	Total Capital
Clothing & decorations	Spinners, piecegoods merchants, hardware dealers, and dealers in cosmetics	1,096	$2,082,930
Provisions	Groceries, fruitshops, restaurants, butchers, and other dealers in produce	1,403	2,689,801
Housing and household articles	Hotels and makers of furniture, earthernware & stoneware	336	1,434,195
Fuel supplies	Lumber yards	212	420,005
Medicine and sanitary services	Drugs stores and laundries	11	35,850

General Classification	Lines Included	No. of Ffrms	Total Capital
Stationery supplies and other educational establishments	Stationers & amusement houses	44	$ 54,053
Daily necessities	Sundry goods stores, etc.	795	1,781,404
Industrial raw materials	Chemical industries and mining	266	246,682
Commercial mediums	Express companies & exchanges	101	524,660
Others		1,067	681,788
TOTAL.....		5,331	3,951,368

Both tables are far from being comprehensive, excluding as they do the most important commercial establishments such as banks, pawnshops, insurance companies, etc. Moreover, the figures given are greatly underestimated, as there are many more firms in Ningpo than are here included.

CHAPTER IV

YUNGCHIA

BEFORE the establishment of the Republic the city of Yungchia was known by many names, Minchung (閩 中) during the Chin Dynasty, Tungou (東 甌) in the early Han Dynasty, and Wenchow (溫州) in the Tang Dynasty and after. Being favourably located at the mouth of the Ou River (甌 江), Yungchia was open to foreign commerce during the Sung Dynasty, when Wenchow, (as the city was then called) was one of the five ports of China where foreign trade offices, *shih po ssu* (市 舶 司) were established. By the Treaty of Chefoo, 1876, Yungchia was formally opened to foreign trade.

The port adjoins Lots'ing on the east and Ts'ingt'ien on the west, with Juian to the south and Hsienchü to the north, and is the gateway of such cities as Yühuan, P'ingyang, T'aishun, Lishui, Chinyun, Sungyang, Shuich'ang Chingning, Yunho, Lungch'uan and Ch'ingyuan. Yungchia has a total area of 11,389 square *li*, and is populated by 162,736 families consisting of 382,791 males and 295,585 females, about 60 per cent of the former being farmers, with artisans and merchants representing about 10 and 20 per cent respectively.

In view of its excellent location, Dr. Sun Yat-sen in his industrial scheme stressed the advisability of building a harbor at Yungchia. Topographically, the *hsien* is higher in the south-west, where there are numerous hills, while the district along the Ou River is extremely low and liable to be flooded. Nitaao (覓 大 岙) Sanp'an (三 盤) and the Fenghuangshan (鳳 凰 山) are important places on the coast while Nanchi (楠 溪), T'ienchangling (天 長 嶺) Lungwan (龍 灣), Meit'ou (梅頭) are prominent positions on the land side. Practically all the big hills radiate from Yentangshan (雁 蕩 山), the most picturesque mountain in

the Province, and which dominates three ranges south of the Ou River, all famous for their scenery. The Ou River connects with numerous streams, the Hsiungch'i (雄 溪) Chüch'i (甌溪), Kuoch'i (郭溪) Tayuan (大原) and Hsiaoyuan (小 原), the last two flowing into the sea after joining the Yungkiang (永 江).

The south-western section of the city near the hills abounds in loess, suitable for growing bamboo and timber, while the sandy loam on the river bank is good for rice, wheat, beans, and sugar-cane. The climate is very pleasant, temperatures not exceeding 90° F. even in summer, and in winter, when most cities are experiencing extreme cold, Yungchia is ice-free. Very seldom is snow seen, but typhoons are common in August, and rain is frequent throughout the year.

Yungchia possesses every facility for water transportation, and according to a report of the Wenchow Customs the number of vessels entering and clearing in 1931 exceeded 10,000, including 520 steamers with a total tonnage of 253,724, seven Western-rigged sailing-ships of 868 tons, and (during the first half-year), 4,153 junks, loaded with 2,112,850 piculs of merchandise. The following table gives comparative details:—

VESSELS ENTERING AND CLEARING YUNGCHIA, 1922-31

	Steamers		Western Rigged Sailing-Ships	
	No.	Total Tonnage	No.	Total Tonnage
1922	161	97,484	309	36,080
1923	283	202,947	374	47,151
1924	262	188,955	290	36,645
1925	267	175,244	284	37,337
1926	426	206,775	162	22,015
1927	519	246,541	113	14,625
1928	535	249,120	74	9,877
1929	516	243,245	26	3,812
1930	666	291,664	17	2,115
1931	520	253,724	7	868

	Total No. and Tonnage of Modern Vessels		Junks	
	No.	Total Tonnage	No.	Total Loadings (Piculs)
1922	470	133,564	6,875	4,198,280
1923	657	250,098	8,579	4,470,200
1924	552	225,600	6,162	2,993,900
1925	551	212,581	6,962	3,412,400
1926	588	228,796	5,845	3,186,500
1927	632	261,139	5,608	3,005,200
1928	609	258,997	5,645	2,856,700
1929	542	547,057	7,342	2,772,200
1930	683	293,779	7,044	2,886,270
1931	527	254,592	4,153	2,112,850

Steamship services bring the city close to South China and such important cities in Chekiang Province as Juian and P'ingyang, as well as to Japan and Formosa to the east and Ninghsien, T'ient'ai, Shanghai and Nanking to the north. The Ou River, on the other hand, connects Yungchia with many large cities on its upper reaches, including Chühsien. In addition there are many highways under construction, the completion of which will make Shanghai, Hangchow, and Shaohsing easily reached by road.

With regard to communication facilities the city is well provided with a network of long-distance telephone lines to practically every place in the Province, and recently a radio service has been made available.

INDUSTRY

There are 13 branches of industrial undertakings in the city involving the use of machinery—spinning, bobbin-making, printing, casting, sugar-refining, ice-making, machine-repairing, wood-sawing, can-making, rice-milling, ironware and glassware factories, and a power-plant. The number of concerns engaged in these enterprises is 77, with an aggregate capital of $656,000. The spinning and weaving industry appears to be the most prosperous, as there are at present no less than 18 textile mills in operation. There is only one powerplant, supplying the area in and around the city with current. Capitalized at $300,000, it is the largest investment in local industry.

INDUSTRIAL ESTABLISHMENTS IN YUNGCHIA

	No.	Total Capital
Spinning and weaving	18	$105,700
Bobbin-making	1	3,000
Printing	13	25,000
Ironware	1	3,575
Sugar-refining	1	5,200
Ice-making	1	30,000
Machine-repairing	3	1,500
Can-making	2	61,000
Glassware	2	1,000
Rice-milling	16	25,400
Foundries	3	11,000
Wood-sawing	15	83,800
Power-plant	1	300,000
Total	77	$656,175

In addition to the above mechanical industries there are 555 smaller factories, which produce handmade articles of various descriptions. Umbrella-making, upon which a large number of people depend for a living, is a very prosperous industry, there being 107 workshops in all. Goldsmiths number 35, whose capital amounts to $81,000 against a total investment of $442,175 in these minor industrial enterprises.

HANDICRAFT FACTORIES IN YUNGCHIA

	No.	Total Capital
Tea-firing	7	$24,000
Soap-making	1	4,000
Candle-making	29	39,200
Goldsmiths	35	81,000
Tailors	26	8,600
Electro-plating	3	7,600
Stone-carving	1	500
Embroidering	5	2,350
Dyeing	1	625
Porcelain	11	4,000
Ironware	38	19,900
Masons	15	3,500
Trunk-making	33	22,900
Oil-milling	3	1,500
Lace-making	6	4,500

	No.	Total Capital
Hemp-thread	10	$ 3,300
Knitting	48	29,100
Painting	13	8,250
Carpenters	2	400
Mat-weaving	35	68,100
Wood and bamboo furniture	80	25,950
Wood-sawing	6	5,500
Rattanware	13	7,400
Tanning	27	16,000
Umbrella-making	107	54,000
Total	555	$442,175

COMMERCE

Most of the business area is within the city wall. The number of shops is estimated at 2,127, with an aggregate capital of $1,693,500. In 1931 the yearly turnover of business amounted to $39,122,626, details being shown below:

Classification	No. of Shops	Percentage of Total	Capital	Percentage of Total Capital	Annual Turnover (1931)	Percentage of Total Turnover
Clothing, footware, etc.	258	12.10	$491,550	29.00	$6,739,978	17.20
Provisions	870	40.90	597.300	35.30	10,111,259	25.90
Household furniture	216	10.20	204,800	12.10	1,354,320	3.50
Fuel	19	0.90	6,700	0.40	54,673	0.20
Drugs and Medical Supplies	137	6.50	112,300	6.60	1,373,964	3.50
Educational supplies	101	4.70	94,500	5.60	1,514,655	3.80
Daily necessities	147	6.90	95,650	5.70	1,223,202	3.10
Industrial raw materials	77	3.60	80,700	4.50	780,611	2.00
Others	302	14.20	10,000*	0.80	15,969,964	40.40
TOTAL	2,127	100.00	1,693,500	100.00	39,122,626	100.00

The above classification is very general, and each selection may be sub-divided into numerous other classes, as follows:

*Capital of 291 shops not included.

Clothing, footwear, etc.—Piecegoods merchants, second-hand clothing stores, shoe shops, hat shops, and opticians.

Provisions—Grocers, tea, salt, bean and wheat, and oil shops, cattle dealers, egg, canned goods, cigarette, fruit, sauce and wine shops, and fishmongers.

Household Furniture—Brick and tile merchants, lacquerware, brass and tin ware, porcelain, wood, hardware, and ironware merchants, bamboo furniture shops, dealers in electric supplies shops, etc.

Fuel—Wood and coal dealers.

Drugs and Medical Supplies—Pharmacies, Chinese drug-stores- dentists, bath-houses, barber-shops, etc.

Educational Supplies—Book stores, photo studios, art studios, phonograph shops, etc.

Daily Necessities—Foreign and Chinese sundry goods dealers, incensen, candle, and firecracker shops, furniture hire shops, etc.

Others—Yarn merchants, wholesale fishdealers, marine products merchants, Customs brokers, bamboo wholesalers, tobacco merchants, artificial fertilizer agents, incubating houses, wholesale dealers in cattle, cereals, fruit, etc.

Transportation of commodities is not very difficult by water except to cities north and north-west, which region is mountainous and has no large rivers. As a rule, goods can be carried much cheaper by boat than by road.

The silver dollar is the standard currency used, *yuan yang* (原 洋), *kun yang* (坤 洋) and *kui yang* (規 洋) being acceptable at a discount.

CHAPTER V

SHAOHSING

SHAOHSING, known as Kuichi (會 稽) before the Sung Dynasty, is a city enclosed between rivers on the east and west, Tsaoêkiang (曹 娥 江), in Shangyü, and Tsientsingkiang (錢 清 江) in Hsiaoshan. The southern boundary touches Nantuchikou (南 鵠 溪 口), Ch'enghsien, while the northern extends to the sea. It has a total area of 5,774 square *li*.

The Grand Canal, called locally Kuanho (官 河), is the longest waterway traversing the city, extending 200 *li* from Tsaoêkiang (曹 娥 江) to Hsihsing (西 興), a large village in Hsiaoshan. The Canal has a width from about 20 feet to 40 feet, and is navigable by steam-launches and junks. South-west of the city is a creek known as Linpukiang (臨 浦 江), 70 *li* in length and 30 feet wide. Another important stream is the Tsaoêkiang, 120 *li* long and 300 feet wide at the broadest part.

Shaohsing has no less than nine lakes, the most famous being Chienhu (鑑 湖), south of the city. It is divided into two sections, east and west, each being more than 20 *li* in diameter. The water in this lake is especially good for making wine for which the city is famous. Other lakes in the vicinity are from five to 30 *li* in circumference, and are known as Tsingtienhu (青 田 湖), Chihtanghu (芝 塘 湖), Hsishihhu (瓜 石 湖), Hochiahu (賀 家 湖), Kangchiahu (康 家 湖), Tanchiaohu (簞 膠 湖), Yangchahu (狹 猱 湖), Chenchuhu (辰 漪 湖) and Tungpanhu (銅 盤 湖).

There are several hills near Shaohsing, including Wolungshan (臥 龍 山), Tingshan (亭 山), Yunmenshan (雲 門 山), Yushan (玉 山), Joyehshan (若 耶 山), Fengshan (豐 山), and Keshihshan (刻 石 山). The soil generally is suitable for the cultivation of bamboo, and while

the lowlands are good for rice, wheat and vegetables, the hilly regions are suitable only for afforestation. Fields at the foot of the hills are often utilized to cultivate early rice.

Shaohsing is certain to become a prosperous city, as besides having very convenient water transportation, it is also the terminus of two important highways, Shaohsing-Tsaoê and Shaohsing-Hsiaoshan, on which regular bus services are maintained, so that it takes only about one hour to travel from the city to Tsaoê, and one hour and a half to Hsihsing, Hsiaoshan. Tsaoê and Hsishan are geographically important, the former being on the Tsaoê-kiang, opposite Ningpo, while the latter is separated from Hangchow only by the Chientang River.

Land in Shaohsing may be classified into four categories, paddy-field, building sites, hill-land, and marshes. Paddy-fields are worth from $50 to $60 per *mou*, and dry fields from $30 to $1,000, while the value of hill-land depends mainly upon the nature of soil, plots suitable for tea cultivation being worth as much as $100 a *mou*, whereas bamboo plantations are worth about $30. Marshland fetches about the same price as bamboo field.

Paddy land of the highest grade yields from 500 to 600 catties of rice a year, and medium grade land about 400 catties, while the lowest grade yields only 200 or 300 catties, the portion going to the landlord as rent amounting to 220, 170 and 110 catties respectively. The annual rent for tea land ranges from $5 to $15 per *mou*, and that of bamboo fields and marshes to a little more than $10 per annum.

According to an estimate made by the Chekiang Provincial Government, there are in Shaohsing 1,075,489 *mou* of paddy fields, 9,798,989 *mou* of dry fields, 1,003,594 *mou* of hill-land, and 78,539 *mou* of marshes. The Shaohsing *hsien* authorities, however, put the total at 17,545,013 *mou*, distributed among ten sections (as the city is now divided) as follows:

Section	PRIVATE LAND					PUBLIC LAND
	Paddy Fields (*mou*)	Dry Fields (*mou*)	Hill-land (*mou*)	Marshes (*mou*)	Total (*mou*)	(*mou*)
1	515,140	104,862	937	151,708	772,647	28,951
2	1,238,818	84,017	383,496	76,322	1,782,653	14,355
3	886,344	288,393	221,854	7,514	1,404,105	17,532
4	461,399	119,395	321,821	5,335	907,950	25,317
5	476,122	71,273	340,977	6,025	895,397	32,744
6	1,614,873	165,323	2,061,716	94,075	3,935,987	15,727
7	458,598	95,180	702,618	25,487	1,282,883	24,685
8	153,088	162,211	1,564,743	148,086	2,028,128	24,269
9	1,752,909	1,212,277	10,037	152,325	3,127,548	36,418
10	1,115,691	235,755	7,150	49,119	1,407,715	69,753
Total	8,672,982	2,539,688	5,616,349	715,996	17,545,013	289,751

Shaohsing never produces sufficient rice for local consumption. Even in the best years it has to buy from other cities about 50 per cent of what is needed to support its population, while in bad years more than 70 per cent of the rice required must be brought from Kiangsu, Anhui, Siam, etc. in addition to the four chief rice-producing districts in Chekiang province, Chinhua, Lanch'i, Chienteh, and T'unghsiang.

The population of Shaohsing is put at 1,225,458, consisting of 649,670 males and 575,688 females, divided into 251,585 families. The density per square *li* is 216 persons, taking 5,774 square *li* as the total area of the city.

INDUSTRY

Shaohsing is not an industrial centre, there being very few modern factories there. Only 12 industrial concerns equipped with machinery, employing 663 workers, as shown in the following table:—

	No.	Capital	Workers
Flour-milling	1	$ 5,000	20
Rice-milling	3	6,400	29
Electric light company	1	449,500	61
Knitting	7	28,500	553
Total	12	$489,400	663

Handicrafts, however, are fairly well developed, and no less than 2,000 makers of wine are kept busy turning out thousands of piculs every year. The following table gives particulars of the minor industries and handicrafts:—

	No.	Capital	Workers
Carving	8	$ 800	50
Lacquerware	12	500	110
Goldsmiths	50	60,000	350
Embroidery	4	1,000	50
Artificial flowers	5	1,000	30
Tanning	8	2,000	60
Tailoring	300	2,000	1,200
Hat making	80	20,000	522
Shoe making	100	20,000	700
Belt and thread making	21	1,400	75
Umbrella making	20	1,000	64
Fan making	12	3,000	112
Flour-milling	123	53,000	756
Rice-hulling	15	30,000	55
Tea-firing	21	45,000	450
Beancurd making	1,512	18,000	4,116
Refreshment rooms	1,243	2,500	5,095
Salted goods shops	160	120,000	739
Lime burning	11	11,000	130
Brick and tile making	71	75,000	284
Stationery goods	7	1,400	80
Paper making	5	1,000	50
Paper-box making	500	30,000	2,500
Dyeing	50	10,000	500
Painting	60	3,000	400
Candle making	80	24,000	640
Soap making	3	5,000	40
Wood-sawing	14	70,000	448
Carpenters	30	60,000	390
Rickshaw and wheelbarrow making	12	30,000	550
Comb-making	8	8,000	50
Bambooware	70	10,000	1,000
Metal utensil factories	30	3,000	240
Printing	4	2,000	124
Cotton-weaving	5	21,000	406
Candle and soap making	2	26,000	36
Oil-mill makers	6	120,000	300
Joss-paper factories	106	35,300	2,167
Wine making	2,030	——	——
Total	6,798	929,900	24,869

COMMERCE

Tea and silk were 80 years ago the most important commodities handled, but trade in these lines has been reduced to an insignificant figure, and with the exception of its wine, Shaohsing has no particularly famous native product.

Business sections cover a very large area, both within the city wall and outside. Silver coins are used as legal tender, exchange rates being largely determined by those in Hangchow.

Among the important commodities brought to Shaohsing from other cities are kerosene, coal, pigs, sheep, chickens, ducks, rice, cloth, cotton yarn, drugs, hardware, marine products, brass, fruits, electrical supplies, timber, sugar and tobacco. Outward shipments include joss paper, wine, tea, bean-curd, fresh silk coccoons, vegetable oil, silk piecegoods, etc. Various guilds are formed by merchants engaged in different lines of business to facilitate the handling of commercial transactions.

AGRICULTURAL PRODUCTS AND LIVESTOCK

Hogs, sheep, and oxen are raised, and chickens, ducks, and geese are bred extensively on practically every farm, eggs providing a large source of revenue for farmers. With regard to agricultural products, these include rice, wheat, beans, potatoes, sesame, turnips, peanuts, rapeseed, etc. in addition to many varieties of fruit, including peaches, plums, strawberries, loquats, water melons, chestnuts, persimmon, oranges, etc. The table below shows the annual production of agricultural products, fruit and livestock, with respective total values and extent of local consumption:

	Annual Production (Number)	Value	Local Consumption (Number)
Oxen	2,580	$193,500	3,000
Hogs	8,170	204,250	25,200
Sheep	3,440	120,400	42,840
Chickens	129,500	93,030	232,200
Ducks	33,000	19,800	77,400
Geese	31,830	31,380	107,500
Eggs	1,040,000	230,920	7,028,000
Duck eggs	4,200,000	84,000	2,940,000

	Annual Production (piculs)	Value	Local Consumption (piculs)
Keng rice	2,222,500	——	——
Nu rice	605,500	——	——
Hsien rice	1,329,108	——	——
Barley	154,700	$734,825	154,700
Wheat	369,200	2,030,600	369,200
Soya beans	1,248	7,488	1,248
Broad beans	240,000	1,440,000	240,000
Small green beans	16,800	142,800	16,800
Small red beans	24	240	24
Sweet potatoes	695,000	486,500	695,000
Corn	28,910	130,095	28,910
Kaoliang	1,610	6,440	1,610
Rapeseed	187,200	1,497,600	187,200
Sesamun seed	248	2,976	248
Cabbage	500,000	150,000	500,000
Turnip	62,500	62,500	62,500
Taro	4,800	14,400	4,800
Bamboo shoots	1,163	3,489	1,163
Peaches	3,000	6,000	3,000
Apricots	4	18	4
Plums (*Prunus mume*)	468	1,120	468
Yangmei	14,220	227,520	14,220
Loquats	240	1,536	240
Water melons	60,000	180,000	60,000
Chestnuts	500	3,500	500
Persimmons	396	396	396
Oranges	3	16	3
Plums (*Prunus communis*)	278	1,390	278
Groundnuts	7,500	260,000	7,500

CHAPTER VI

WUHSING

WUHSING was under the prefecture of Huchow (湖 州), during the Ming (明) and Tsing (清) Dynasties, but was incorporated as a *hsien* since the establishment of the Republic and is more popularly called Huchow. It is situated in the northern part of the Province, bounded on the east by T'unghsiang and Wukiang of Kiangsu, on the south of Ts'ungteh, Tehts'ing, and Wuk'ang, on the west by Ch'anghsing and Anchi, and north by the T'aihu Lake, across which is Wuhsien of Kiangsu province. The district lies on a level plain, with its southwest section a little hilly. About 155 *li* west of the *hsien* city on the border between this *hsien* and Wuk'ang are found two branches of the Mokanshan range, one of them running southeastward about 40 *li* ending at Tehts'ing *hsien* city, and the other running about 100 *li* northward meeting the Yenshan (峴 山) on the south of the *hsien* city. To the northwest is the Pienshan (弁山), to the west the Paihaoshan (白鶴山) and to the north the Hsiaomeishan (小梅山), all lying on both the Wuhsing and Ch'anghsing *hsien*. The Hsiaoleishan (小雷山), standing on the T'aihu Lake 20 *li* from the shore of Wuhsing is the boundary line of this *hsien* and Wuhsien of the neighbouring province.

This *hsien* is well provided with water transport facilities, numerous streams crossing the whole district. The four main streams are the Yenchi (謁溪), the Hsishaochi (西苕溪), the Grand Canal, and the Lanchitangho (瀾溪塘河). In addition to these four main routes, a net work of branches are found all over the *hsien* district, all of them navigable by steam launches or sail boats.

The climate of this *hsien* is very mild, rarely over 90 degrees F. in the summer and below 30 degrees in the winter. Snow has been scarce in recent years, while rainfall is often too heavy in the summer, rendering the place very damp.

The area of the *hsien* is 5,535 square *li*, consisting over 90 per cent of clayey soil, which is most suitable for the cultivation of mulberry trees, paddy and wheat. The hilly land is also very fertile, an ideal area for afforestation. Mulbery tree, however, is the chief plant found. Most of the hilly land has been cultivated, with only about 20 per cent undeveloped.

The population of the *hsien* is 669,589, consisting 384,468 male and 285,121 female. The total number of families is 164,660. Over 60 per cent of the population is engaged in farming, 30 per cent in industrial and commercial undertakings, and about 10 per cent in educational circles.

Waterways are the most important means of communication. There are five routes which are regularly plied by steam launches, viz:

1. **The Hu-Sih Route** (湖 錫 線).—Connecting Wuhsing and Wusih, via Tachienchen (大 鎰 鎮), Wuhsing, the most important line linking places on the Shanghai-Nanking area. Daily steam launch service is available.

2. **Hu-Shen Route** (湖 申 線)—Connceting Wuhsing with Shanghai, via Chiukuan (舊 館) and Nanhsun (南 淳), the most important route for goods transportation to Shanghai. Steam launch service every other day.

3. **Hu-Hang Route** (湖 杭 線)-connecting Wuhsing and Hangchow, via Yuanchiahui (袁 家 滙), Tikang (荻 港) and Linghu (菱 湖). This was the most important line leading to Hangchow before the completion of the Nanking-Hangchow highway. Daily steam launch service.

4. **Hu-Ch'ang Route** (湖 長 線)—connecting Wuhsing and Ch'anghsing, via Yenshuich'iao (晉 水 橋), Patsuchiao (八 字 橋) T'angk'ou (塘 口). Daily steam launch service.

5. **Chia-Hu Route** (嘉 湖 線)—Connecting Wuhsing and Chiahsing, via Shuanglin (雙 林) and Wuchen (烏 鎮), and main line linking Wuhsing with Chiahsing on the Shanghai-Hangchow-Ningpo Railway.

Sail boats are usually freight carriers, and there are no fixed schedules of service. There are 2 steam launch companies, with 47 steam launches, besides about 500 other water crafts.

The Nanking-Hangchow National Highway is the chief and only means of overland communication. This highway traverses the *hsien*, passing Tich'ichen (埭溪鎮), Ch'ingshanchen (青山鎮), Shihchiach'iao (施家橋), Wuhsing City, Yangchiapu (楊家埠), and Lichiahsiang (李家巷) all within the *hsien* limit. Regular bus service is maintained, but only for passenger traffic.

There are two telegraph offices within the *hsien*, one in the City and another in Nanhsun. Long distance telephone service is maintained between the City, Nanhsun and Shuanglin.

INDUSTRY

Manufacturing industries of present day sense are of very recent origin, although silk weaving and reeling had long been most important handicraft industries in Wuhsing. Most of the other factories are those which are directly or indirectly dependent on the silk reeling and weaving mills for their business, such as steel reed factories and machine shops, which supply the silk mills machinery and repairing service. Rice mills are second in number although they are but of small sizes. A power plant is established in this *hsien* with a capital of $600,000, supplying local factories 810,000 units of electricity besides domestic lighting. The following table gives the number of different kinds of factories in Wuhsing.

MANUFACTURING FACTORIES IN WUHSING

	Number of Mills	Total Capital	Number of Operatives
Silk Weaving	23	$259,500	1,636
Silk Reeling	5	358,000	2,062
Iron Foundry	5	13,500	77
Steel reed	2	4,000	16
Rice milling	13	37,100	192
Power Plant	1	600,000	86

Silk Industry.—The Wuhsing silk piece-goods has been famous for over three quarters of a century, although not without undergoing periods of prosperity and depression. After the Taiping Rebellion, about 60 years ago, the silk industry began to grow, with most of the silk exported abroad through Kuangtung to the amount of about thirty thousand bales a year. Raw silk produced here was exclusively for export, while that consumed by the weavers was bought from Kiangsu and Anhui. The Wuhsing silk goods is known as *chou sha* (縐 紗), or crape, with a rinkled appearance and had been very popular all over the countries for many years. Those kinds with a smooth surface was known as *yang ch'ou* (洋 綢), mostly sold to Kuangtung.

With the introduction of machine filature in Shanghai by foreign merchants the silk industry in the interior began to decline, on account of the finer quality of the output of these filatures. Silk export from this area decreased, and was consumed by local mills which turned out products now better than ever before. The famous *hu chou* (湖 縐) found favour as north as Peking (now Peiping) and Tientsin, and as south as Kuangtung, while large quantities were sold along the Yangtse. The products shipped to the northern cities were of especially good quality, and this formed the most popular wearing stuffs for the wealthier classes of the people. Towards the end of the Manchu Dynasty, the annual production of *hu chou* was valued at over $3,000,000, while the output of the reeling industry declined considerably, being affected by the more efficient steam filatures in Shanghai.

At the beginning of the Republic, a panic was created by the absurd rumour that a nationally uniform dress would be adoptd, for which silk goods was not to be used. Many silk merchants went bankrupt as the victims of the panic. The silk goods market was further affected by the imported stuff known as *yeh chi ke* (野 鷄 葛), of Japanese origin, which possessed higher brilliancy, and resembled closely in quality the *hu chou*. Much attention was given to this matter by the provincial authority of Chekiang, and training and research institutions were established for the improvement of silk weaving industry. Machine weaving suddenly gained advance, and the well known *hua ssu ke*

(華 綢 局), of numerous and attractive designs, began to be introduced into the public and soon found favour of the discriminating. The raw silk export trade was at that time at a very low ebb, and was consumed by the many weaving mills locally, instead of materials being brought from Kiangsu and Anhui provinces. For the first fifteen years of the Republic, silk weaving industry in Wuhsing developed most rapidly, turning out about $20,000,000 worth of goods every year, and perhaps enjoying the golden period.

During the past decade, a number of silk weaving mills have been established in Shanghai, which turned out ample supply of silk piece-goods, considerably displacing the product from Wuhsing. Another advantage accorded the Shanghai mills was they were not subject to payment of silk tax which was imposed upon Chekiang mills. With the introduction of imported rayon and rayon-silk interwoven products the market for Wuhsing goods has been still narrowed, the former having newer designs and appearance, and sold at much lower prices. The silk filatures too shared the same fate, as the world market for silk during the last several years was bad.

Foundry—The iron works and machine shops are devoted to the repairing of machinery, and are not manufacturing machinery of any kind. The chief customs of these works are the silk weaving mills with the rice mills and steamships ranking next. Five of these works are equipped with electric motors for power, but are operated only in moderate scale. Iron used by the works is bought from Shanghai, and is of British and Indian origin. The amount of business depends largely on the condition of the silk industry, which undergoing a bad time during the last few years, needs little of their service.

Steel reeds.—Reeds being a part of the weaving machine, this industry is entirely dependent on the silk industry. There are now two factories in Wuhsing, the Chung Hua (中 華), established in 1927, and the Ming Yang (明 揚), established in 1932. Steel consumed by these factories is about 3,000 kilograms a year, and is imported from Switzerland. The total production of these two concerns is about 4,000 reeds a year, at $7 a piece.

The first half year is usually better in business but during last years, a hard time was experienced on account of the decline of silk industry.

Rice Milling—Rice milling had come into the shape of a modern industry only 4 or 5 years ago. Of the thirteen mills in the district, four are equipped with electric motors, and nine with engines. Rice milled every year amounts to about 1,400,000 piculs, worth over ten million dollars. Besides rice produced locally, that from Ihsing, Ch'anghsing, Anchi, Hsiaofeng, Ssuan, Meichi, Kuangteh, Wusih, etc. is milled by these 13 concerns. The charge for each picul of rice milled ranges from 18 to 20 cents.

The Electric Plant.—The Wuhsing Electric Company was incorporated in 1914, and reorganized in 1926, with an authorised capital today of $600,000. It is equipped with three steam and diesel engines, six generators, capable of supplying 1,852,000 units of electricity.

COMMERCE

The commercial centre of Wuhsing *hsien* is found in the *hsien* city, while Nanhsun, Linghu, Shuanglin are also quite busy commercially. There are about 6,655 business firms in the 26 towns and villages within the *hsien* limit, handling over ten million dollars worth of business every year.

Raw silk and silk goods have long been the most important articles of commerce. The *tsatlee* (輯里) silk had been famous, and about 14,000 bales are sold each year (compared with 40 years ago when the amount of *tsatlee* silk sold reached 30,000 bales).

Among other products of this *hsien* may be mentioned the Huchow writing brush, which used to the favorite of those who are particular in choosing their means of writing. Hemp stuffs, *ling* (綾, for picture mounting), feather fans, bamboo, tea, dried roses, etc. are sold to places as Shanghai and Soochow.

Wuhsing buys from other places chiefly foodstuffs, cotton piece goods, household necessities, coal, etc. Nothing imported into Wuhsing is re-shipped to other places but is consumed entirely in the *hsien*.

COMMERCIAL HOUSES IN WUHSING

	Number	Capital	No. of Employees
Silk hong	14	$14,800	90
Silk weavers	74	33,320	218
Silk Piece-goods Dealers	51	74,100	362
Silk and Cotton Piece-goods	17	249,500	258
Cocoon	105	——	—
Preserves	21	67,280	172
Confectionery	11	67,280	59
Salted & Preserved Meats	23	14,830	121
Rice	26	94,800	271
Groceries	118	130,000	589
Candle	11	14,700	80
Coal	15	11,900	43
Cigarette	50	15,050	43
Sundries	57	76,000	404
Drugs	39	149,250	321
Jewelry	12	26,100	58
Clothing	80	58,000	190
Pawnshops	11	430,500	137
Native banks	8	150,000	—
Banks	2	——	—

There are at present only 8 native banks operating, 11 having been suspended business between 1931 to 1932, on account of the callapse of the silk trade. The two banks are the Bank of China branch and the Chekiang Local Bank.

The main medium of exchange is the banknotes issued by the Bank of China, with silver as means of settlement between banks. Accounts are collected three times a year, at the Dragon festival, the Mid-autumn festival, and the end of the year. The Chamber of Commerce of Wuhsing is representative body of the business interests of the *hsien*, with branches at Linghu and Shuanglin. Of the trade guilds we find those for the pawnshops, native banks, silk weaving, silk filature, cotton weaving, clothing, drug, groceries, carpenters, etc.

AGRICULTURAL PRODUCTS

The chief agricultural product of Wuhsing is rice, with beans next in importance. The following is a list of estimated quantities and value of agricultural product of Wuhsing:

	Annual Production	Value	Local Consumption	Exported	Principal Market
Cows	1,240 heads	$102,400	1,240 heads	——	
Pigs	7,530 „	150,600	7,530 „	——	
Sheep	15,800 „	158,000	15,800 „	——	
Chickens	480,000 „	346,000	250,000 „	230,000 heads	Shanghai
Ducks	300,000 „	150,000	130,000 „	170,000 „	„
Chicken eggs	15,000,000 pieces	300,000	7,000,000 pieces	8,000,000 pieces	„
Duck eggs	10,500,000 „	210,000	2,500,000 „	8,000,000 „	„
Ken Rice	2,040,000 piculs	——	——	——	
No Rice	51,428 „	——	——	——	
Hsien Rice	872,857 „	——	——	——	
Wheat	78,239 „	39,119	78,239 piculs	——	
Beans	47,240 „	273,840	47,240 „	——	
Broad beans	190,776 „	1,441,542	190,776 „	——	
Small green beans	11,750 „	129,250	11,750 „	——	
Red beans	828 „	8,280	828 „	——	
Sesame	150 „	1,950	150 „	——	
Rapeseed	3,840 „	27,880	3,840 „	——	

	Annual Production	Value	Local Consumption	Exported	Principal Market
Sweet Potato	16,200 „	$9,720	16,200 „	——	
Cabbage	1,000 „	1,000	1,000 „	——	
Bamboo shoot	120,00 „	720,000	20,000 „	100,000 piculs	Kiangsu
Turnips	400,000 „	280,000	250,000 „	150,000 „	T'unghsiang, Ts'ungteh, etc.
Taro	147,412 „	442,236	147,412 „	——	
Groundnuts	3,840 „	42,240	3,840 „	——	
Citrous fruits	50 „	500	40 „	——	
Plum *(Prunus mume)*	750 „	4,500	750 „	——	
Apricot	80 „	800	80 „	——	
Peach	30,000 „	210,000	30,000 „	——	
Plum (*Prunus Communis*)	250 „	2,000	250 „	——	
Persimmon	300 „	1,500	300 „	——	
Cherry	160 „	3,200	160 „	——	
Chestnuts	4,000 „	40,000	1,000 „	3,000 „	Shanghai
Pomergranate ...	100 „	600	100 „	——	

CHAPTER VII

CHIAHSING

CHIAHSING became a *hsien* in the Tung Han Dynasty. The northwest part of the *hsien* was once separated to become the Hsiushui (秀水) in the Ming Dynasty, but was again combined after the establishment of the Republic, rechristened as Chiaho (嘉禾), which was later changed back into Chiahsing.[1] The *hsien* is bounded on the east by the P'inghu on the northeast by Chiashan, on the west by T'unghsiang, on the south by Haiyen, on the southwest by Haining and on the north by Wukiang of Kiangsu. Before the completion of the Shanghai-Hangchow-Ningpo Railway, the Grand Canal was the most important means of communications, which linked Chiahsing with Chiashan, Haiyen, Ts'ungteh, P'inghu, T'unghsiang, and Haining, these districts forming what may be called a economic unit. The operation of the Railway has changed entirely the economic relations of these *hsien*.

The area of the *hsien*, according to the Provincial authority, is 3,196 square *li*, of which 3,017 square *li* is level plain (approximately 1,629,000 *mou*), streets, 15 square *li* (8,100 *mou*), lakes and creeks, 164 square *li* (88,558 *mou*).

The climate is gentle, with a maximum of 98 degrees and minimum of 22 degrees F. Rainfall is plentiful, irrigation being made very adequate, but often the fields being flooded by incessant rain.

Throughout the entire area, the *hsien* is on an level plain, with the southeast part a little higher. There are two small hills in the *hsien*, the Hsushan (㟃山), about 150 feet high, and the Shushan (㚇山), only 20 feet high. The soil is fertile, most suitable for the planting of rice, wheat and mulberry trees.

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(1) Chiahsing is often wrongly romanized as Kashing.

The main water way is the Grand Canal, which links Soochow in the north and Hangchow, via T'unghsiang and Ts'ungteh, on the southwest. The P'inghutang (平湖塘), leads to P'inghu, being the second important waterway. The Haiyentang (海鹽塘) and the Chiashantang (嘉善塘), connecting the *hsien* with Haiyen and Chiashan respectively, are the two easterly flowing streams, while the Changshuitang (長水塘) runs south direct to Haining. With the exception Chiashantang, all waters are navigated by steamboats and sailboats, with five regular routes of steam launch service operating.

WATERWAY ROUTES OF CHAHSING

Route		Terminals	Via	Service
Soo-Chia Route	(蘇嘉線)	Soochow to Chiahsing	Grand Canal	Steam launches, sailboats
Chia-P'ing Route	(嘉平線)	Chiahsing to P'inghu	P'inghutang	" " "
Chia-Hai Route	(嘉海線)	Chiahsing to Haiyen	Haiyentang	Steam launches, sailboats
Chia-Shan Route	(嘉善線)	Chiahsing to Chiashan	Chiashantang	Sailboats
Chia-Ning Route	(嘉寧線)	Chiahsing to Haining	Changshuitang	Steam launches, sailboats

The Shanghai-Hangchow-Ningpo Railway traverses the *hsien*, with three stations at the *hsien* City, Ch'ihsingch'iao (七星橋) and Wangtien (王店) respectively. Chiahsing attains the importance as the centre of distribution of products from different neighboring towns and villages to points connected by the railway and also goods from the railway to those neighborhood places. On account of the higher freight charged by the railway, waterways are still extensively used, inspite of the slowness.

Chiahsing can be communicated by telegraph and post, and private letter carriers. Four post offices and 11 post boxes are established in the district. Mails from and to Shanghai and Hangchow can be delivered within one day.

The population of Chiashing, according to the investigation of the *hsien* Government in 1928, was 100,217 familes, totalled 359,301 persons, of which 251,192 were males and 108,109 females. But according to the investigation in 1931, the population was 96,807 families, comprised of 231,531 males and 190,018 females, making a total of 421,549, and a density of 132 per square *li*.

INDUSTRY

Silk filatures used to be the most important industry in Chiahsing, with its abundant output of silk cocoons. The Wei Ch'eng Weaving Co. (緯成公司) of Hangchow established its branch in Chiahsing in 1922 to take advantage of the supply of cocoons. The branch is known as Yu-chia (裕嘉), with a capital of $3,000,000 employing a staff of 100 men and 452 male workers and 1,053 female workers. The annual output was 200 piculs of raw silk, 400 piculs of silk yarn, and 2,000 pieces of silk piece-goods. The products were sold to Shanghai. In 1926, two silk filatures were established, the Hou Sheng (厚生), with capital of $100,000, 25 male workers, 350 female workers and 150 child workers and the Hsiu Lun (秀綸), with capital of $40,000, 23 man, 257 woman and 84 child workers. The Hou Sheng was capable of putting out 400 piculs of raw silk and the Hsiu Lun 180 piculs, which used to be exported abroad. A fourth filature is the Fu Hsing (福興), of which details are lacking. All these filatures suspended operation in 1930 on account of the decline trade.

The Chia Ho (嘉禾) is the only dyeing and weaving mill in Chiahsing, established in 1912, with only 40 wooden handlooms. The number of looms was increased to over 200 in 1916. In that year another mill, the Ch'ien I (謙益) weaving mill was established, equipped with three weaving machines. During the following years, the textile industry was quite flourishing, before the introduction of Japanese

cotton piece-goods into Chiahsing. In 1924 the Ch'ien I Mill was closed while the Chia Ho Mill was expanded, capital being increased, and electrically driven machines installed. In 1928, the concern was again reorganized, capital was incraesed to $100,000. At present, the Company employs 526 female workers and 40 male workers, with a staff of 124 men. The plant covers an area of 8 *mou* of land, with six factory buildings. About $300,000 worth of cotton piece-goods is put out by the mill, and is sold chiefly to places in Chekiang and Kiangsu provinces.

There are two weaving mills which employ handlooms, the Hsin K'ang (辛康), and the Hsu Ta Mei (許大美). The total capital of these two mills is only $47,000, with 64 handlooms, employing 113 men. The products, about 3,600 pieces annually, are sold to Chiahsing, Wuhsing and other *hsien*.

Brass and pewter wares used to be one of Chiahsing's famous products, especially foot warmers, which were almost indispensable in the winter before the iron stove began to be popular. At present, only three of the brass and pewter makers are left, the Heng I (恆義), the Chen Wan Feng (陳萬豐), and the I Chang (義昌). The aggregate capital of the three firms is $18,000, and the total workers employed by is 180 men. The annual output is 3,600 pieces which are sold to Chiahsing, Wuhsing, Shanghai and Changchow.

There are 8 rice mills in Chiahsing, the oldest being the Nan Ch'eng (南成), established in 1925. The total capital of the eight firms is $7,200, equipped with only one milling machine in each mill, with the exception of the Kuang Feng (廣豐) which has two machines. About 50 workers are employed by each mill. The mills are doing fairly good business, as Chiahsing is one of the rice producing districts in the Province.

One paper mill is found in Chiahsing, the Min Feng Paper Mill (民豐), with a capital of $500,000, employing 429 workers. This was established in 1924, as the Ho Feng (禾豐), but was forced to suspend on account of bad

business, and was sold to the Min Feng, the present name of the mill.

The Yuan Hu (鼋 瑚) Soap factory is the only one of the kind in Chiahsing, capitalised at $2,000, capable of producing 5,000 boxes of candles and soap, worth about $20,000, sold mainly to the neighboring places in Chekiang and Kiangsu.

The six electric plants may be mentioned here, with the Yung Ming (永 明) in the *hsien* city as the biggest. The other five are in Hsintengchen, Wangtien, Hsinhuang, Hsinfeng and Wangchiangching.

FACTORIES IN CHIAHSING HSIEN

	Number of Factories	Total Capital	Employees
Weaving & Dyeing	1	$100,000	690
Hand-weaving	2	7,000	113
Soap and Candle	1	3,000	10
Rice Milling	8	7,200	56
Paper	1	500,000	429
Brass ware	3	18,000	187
Electric Plants	6	163,000	52

COMMERCE

Chiahsing is well provided with transportation facilities both by water and overland. A fair amount of daily necessities are handled by retailers in different towns of the *hsien*. Among the imports into the *hsien* the most important are cotton piece-goods, cotton yarn, silk goods, provisions, sugar, skins, beans, etc., and exports from Chiahsing, silk, cocoons, rice, beans, rapeseed, etc. Retailers' guilds are organised by those engaged in rice, cocoon, preserved meat, dye, wine, butchery pawnshop, native bank.

Wholesalers or commission agents are very numerous, and there are 406 wholesalers and 123 commission houses in the *hsien*, all known as *hong*. Most of them deal in agricultural products, especially in cereals. *Hong* may be

roughly classed into 19 heads, as given in the following table:

COMMERCIAL HONG IN CHIAHSING

	Wholesalers		Commission Houses	
	Number	Total Capital	Number	Commission Charged Annually
Grains	107	$2,017,580	27	$24,177
Provisions	7	40,000	—	——
Groceries	7	168,600	—	——
Wine	6	25,500	—	——
Fish	37	217,700	1	500
Vegetable	33	38,940	2	220
Fruits	7	40,400	6	1,300
Poultry	4	17,500	—	——
Cattles	30	147,600	5	3,250
Egg, Skin, Bone, etc.	22	349,500	3	1,300
Fuel	17	63,400	3	800
Mulberry Leaves	29	35,000	55	7,820
Paper	5	9,000	—	——
Fertilizer	43	46,290	20	6,480
Leather goods .	2	55,000	—	——
Silk & Silk Goods	17	166,500	—	——
Brick, Tile & Lime	24	45,050	—	——
Coir & products	5	21,500	—	——
Miscellaneous	4	21,300	1	150
Total	406	3,526,360	123	45,997

Being a rice producing district, rice trade is the most important trade of Chiahsing. Through the network of waterways and overland routes, Chiahsing rice is sold in Chiashan, Sungkiang, Shanghai, P'inghu, Haiyen, Shengtse, T'unghsiang, Wuhsing, Ts'ungteh, and Hangchow. The rice *hong*, locally known as *lu chen hong* (陸 陳 行), buy from farmers who offer their crop after the harvest. The rice is then stored in the storage, awaiting for the rice merchants from Hangchow, Hsiashih and Linghu to come. They are different from commission agents in that they buy and sell on their own account. A rice *hong* is required to pay a *hong* tax before it is allowed to do business, and

a *hong* license is good for one year. The main items of trade are rice, wheat and beans. Most of the rice is locally grown, but a small proportion less than one per cent is shipped into Chiahsing.

Upon arrival of boats loaded with rice, the *hong* weigh, unload, and pay for the cargo at current prices to the sellers, the farmers. Should the amount of the shipment is too large and the *hong* is not willing to take it all, it may be recommended to other *hong* which would take the remaining portion.

The rice *hong* sell their stock in one of the three ways. First, they wait for the arrival of the rice merchants from other localities who have come to make purchases. Second, salesmen are sent out with sample to prospective buyers to solicit their orders, fixing at the same time the term of sales and date of delivery. A third way is that the *hong* sell by samples to buyers outside Chiahsing, delivery to be effected at the place of storage by the buyers themselves.

The busy season for the rice trade is the period between the end of the sixth month to the end of the eighth month, especially during the 8th month when the crops are being harvested. From the 12th month to the second month in the following year a slack season is seen. After the second month, rice trade begins to revive, as new crops are yet far from harvest time. The prices of rice are lowest in the autumn because of during this season the new crop is harvested.

The purchasing of rice by the *hong* from the farmers is on cash terms, and the *hong* are financed by the native banks. Interest on these advances ranges from 1.2 to 1.8 per mille per month, varying with the money condition in the locality.

PRODUCTS

Chiahsing being an agricultural district turns out large quantities of farm products, especially abundant are rice, wheat, and beans. The following table gives the quantity, value and sale of farm products of Chiahsing.

	Annual Production	Value	Local Consumption	Exported	Principal Market
Cows	35,000 heads	$2,800,000	35,000 heads	——	
Pigs	20,000 „	160,000	10,000 „	10,000 heads	Hangchow
Sheep	280,000 „	1,120,000	90,000 „	190,000 „	Shanghai & Ts'ungteh
Chickens	300,000 „	300,000	200,000 „	100,000 „	Shanghai & Hangchow
Ducks	20,000 „	16,000	20,000 „	——	
Chicken eggs	1,400,000 pieces	29,000	600,000 pieces	800,000 pieces	Shanghai
Duck eggs	360,000 „	7,200	360,000 „	——	
Keng Rice	1,170,000 piculs	——	——	——	
Nu Rice	360,000 „	——	——	——	
Hsien Rice	1,620,000 „	——	——	——	
Wheat	15,600 „	93,600	15,600 piculs	——	
Bean	64,000 „	220,400	25,600 „	38,400 piculs	Hangchow
Broad Bean	308,060 „	1,108,016	138,627 „	169,433 „	„
Rapeseed	64,000 „	384,000	64,000 „	——	
Maize	5,000 „	20,000	2,000 „	3,000 „	Hsiashih
Kaoliang	4,460 „	12,380	4,460 „	——	
Cabbage	9,000 „	9,000	9,000 „	——	
Turnips	9,000 „	9,000	9,000 „	——	
Peach	840 „	8,400	60 „	780 „	Shanghai
Plum	1,500 „	4,500	1,500 „	——	

CHAPTER VIII

LANCH'I

LANCH'I was incorporated as a *hsien* in the Ming Dynasty under the prefecture of Chinhua (金華府) and the status was maintained throughout the Ching Dynasty, and after the establishment of the Republic, the *hsien* had been under the Provincial authority. It is bounded on the east by Chinhua, on the south by T'angch'i, on the southwest by Lungyu, on the west by Shouch'ang, northwest by Chienteh, and on the north by P'ukiang. Lanch'i, literally meaning orchid valley, is so called because abundant orchids, or *lan* (蘭) flowers are grown throughout the district.

The more important hills within the *hsien* borders are the Yuhushan (玉壺山), entering from Chinhua, the Chinp'anshan (金盆山), in the southwest part, the Tayunshan (大雲山), a range of several miles long on which plenty of *lan* flowers grow.

The main water traversing the *hsien* is the Lanch'i River, which combines the Chinhua Kang (金華港) from Linkiang, and the Chü Kang (衢港), from Lungyu. Numerous streams join this water which empties itself into the Tsientang River.

The climate of Lanch'i is gentle, temperature ranging from 36 to 98 degrees F., and about 60 per cent of soil is clayey, suitable for rice and wheat, while the remaining 40 per cent is sandy, good only for other gains.

AREA AND POPULATION

The area of the *hsien* is 6,300 square *li*, of which about 4,500 is plain and 1,500 hilly land and 300 water. The area of cultivated land varies every year, the changes since 1912 being given in the following table.

CULTIVATED AREA OF LANCH'I *(mou)*

	Fields *tien*	*ti*	Hilly land	Uncultivated land	Marshes	Total
1912	543,100	111,930	273,200	56,916	43,232	1,028,378
1916	545,310	112,154	275,400	56,120	43,232	1,032,216
1921	548,621	113,236	277,800	55,710	43,220	1,038,587
1926	555,872	118,810	281,210	53,460	43,220	1,052,572
1931	555,467	118,221	288,800	52,330	43,037	1,057,805

The total population, according to investigation of 1931, was 267,848, of which 154,152 were males and 113,696 females. About half of the population are engaged in farming.

COMMUNICATIONS AND TRANSPORTATION

Lanch'i is situated on the Upper Tsientang River, which leads to Hangchow, a distance of about 360 *li*. The water is shallow at low tide, and is navigable by junks. The major portion of the inward and outward shipments of goods is carried through this stream. The completion of the Hangchow-Kiangshan Railway made more efficient and quicker transportation, but the Tsientang still keeps its position as an important means of transportation on account of the lower freights charged as compared with those of the railway.

The chief means of transportation overland are the Hangchow-Kiangshan Railway, which begin from Hangchow, via Hsiaoshan, Linpu, Chuchi, P'ukiang, Iwu and Chinhua, with the present terminus at Lanch'i. The line is being extended from Chinhua and will end at Kiangshan on the border of the Chekiang and Kiangsi Provinces. The distance from Hangchow to Lanch'i is 200 kilometres, about ten hours being required to cover the journey.

The completed highway is the Chühsien-Lanch'i Highway, starting from Chühsien, passing Shuangch'i, Lungwu, Lopu (羅埠) in T'angch'i, terminating at Makungtsui (馬公嘴) of Lanch'i, of a length of 72 kilometres. The Shouch'ang-Lanch'i Highway is now under construction.

COMMERCE

Lanch'i is a point which the inward and outward shipments of goods from and to Anhui, Kiangsi and Fukien must pass. For this reason, Lanch'i will be able to maintain its importance although the trade routes may be changed after the completion of the balance of the Railway, which is to run from Chinhua to Kiangshan leaving the section between Chinhua and Lanch'i as branch.

There are four main trade routes which have been followed by merchants, (1) via Chühsien to Kiangsi, (2) via Chühsien, Kiangshan to Fukien, (3) via Chienteh, T'unglu, Fuyang or Chinhua, Iwu, Chuchi, Lin'pu and Hsiaoshan, ot Hangchow.

The larger part of exports of this *hsien* consists of foodstuffs, while imports of manufactured goods. The following table gives an estimated quantity of goods imported and exported.

IMPORTS OF LANCH'I

Salt	30,000 piculs
Sugar	6,500 bags
Cotton Piece-goods	100,000 pieces
Firewood	2,500,000 piculs
Petroleum	100,000 tins
Wheat Flour	12,000 bags
Medicine	5,000 pkgs.
Paper	12,000 pkgs.
Groceries	4,000 pkgs.
Cigarettes	4,000 boxes
Tea	2,200 piculs
Silk Piece-goods	12,000 pieces

EXPORTS OF LANCH'I

Rice	300,000 piculs
Pigs, living	40,000 heads
Hams	100,000 pieces
Eggs	100,000 crates
Preserved Dates	3,000 buckets
Vegetable Tallow	4,000 piculs
Beans	50,000 „
Eggs, Duck	30,000 crates

Among merchants, a Chamber of Commerce of Lanch'i *hsien* is formed. There are three town Chambers of Commerce at Yupu (游埠), Yungch'ang (永昌), and Chukê (諸葛). The *hsien* Chamber of Commerce represents the guilds of native banks, silk piece-goods, ginseng, oil, rice, provisions, ham, hosiery, tailor, foundry, tea, jewel, fruit, hardware, restaurant, drug, and other merchants.

COMMERCIAL FIRMS IN LANCH'I

Jewellery	Number	Volume of Business
Jewellery	12	$38,380
Printing & stationery	7	145,600
Candy sugar	4	19,800
Candle	1	8,000
Dyeing works	14	14,600
Grains	43	2,168,900
Firewood & charcoal	25	109,850
Soy & Wine	16	398,600
Silk goods	27	? 017,400
Hams & preserves	14	545,300
Long-an	32	1,040,450
Sugar refinery	5	30,000
Canned goods & confectionery	4	17,170
Masonry	39	43,600
Fruits	34	101,660
Hats	29	3,500
Wearing apparals	13	25.110
Trunks & boxes	3	12,100
Shoes & boots	19	36,500
Pottery	11	181,650
Oil	15	2,788,300
Sundries	18	140,700
Cotton & silk cords	31	375,050
Cosmetics	3	12,900
Bicho de mar & bird's nests	7	378,500

Jewellery	Number	Volume of Business
Patent medicines	4	29,800
Medicinal herbs	27	552,060
Paper	13	377,660
Timber	15	109,820
Electric supplies	2	46,500
Metal wares	20	224,600
Renting agencies	7	100,800
Candle & soap	13	726,870
Bristle	—	1,200
Pastry	62	53,780
Transportation	3	9,500
Umbrella	3	6,500
Dyes	6	155,800
Firecrackers	17	37,650
Photography	2	3,700
Dentistry	1	1,000
Clock, watch & spectecles	2	9,000
Timber & bamboo	11	32,400
Mats & matting	3	32,400
Cords & ropes	7	2,000
Flour	5	24,800
Power plants	3	24,000
Casing & eggs	5	13,500
Lacquer	5	2,000
Picture mounting	5	2,000
Preserved dates	5	43,770
Others	38	947,730

MONEY MARKET

Banking business in Lanch'i is not developed. There are two modern style banks, the branch of the Bank of China and of the Chekiang Provincial Bank. Local merchants use more of the service of native banks because of the limited amounts of loans or overdrafts allowed and collateral securities required by the modern banks. There are 14 native banks, as shown in the following table.

NATIVE BANKS IN LANCH'I

Name	Declared Capital
Shuimao (瑞 茂)	$12,000
Paotai (寶 泰)	11,000
Yutai (豫 泰)	12,000
Changyuan (長 源)	12,000
Tunghengyuan (同 亨 元)	8,000
Hungyu (鴻 裕)	10,000
Taiheng (泰 亨)	12,800
Juiheng (瑞 亨)	12,000
Yuanheng (源 亨)	12,000
Yutungyuan (裕 通 源)	11,000
Wanheng (萬 亨)	10,000
Iyuan (義 源)	10,000
Chuheng (聚 亨)	9,600
Iho (義 和)	12,000

Although these banks are lowly capitalised. deposits received often exceed half a million dollars, and the total of these banks is about $4,000,000. Advances and loans are made chiefly on personal credit, at interest about 12 per cent per annum. Money can be remitted directly to Shaohsing, Ningpo, Shanghai, Hangchow, Soochow, etc, through these banks. Inward remittances amounts annually to 7 or 8 millions, mostly from Hangchow and Shanghai. Circulating media are chiefly bank-notes issued by the Bank of China and Bank of Communications of Shanghai.

Lanch'i is the financial centre of its neighboring *hsien*, and Chienteh, Chühsien, Chinhua, and other *hsien* often come to this centre for accomodations.

PRODUCTS

Lanch'i is famous for its production of pigs and hams. Agricultural products are also abundant. The following table is a list of products with estimated quantities of production each year.

PRODUCTS OF LANCH'I

	Annual Production	Value	Local Consumption	Exports
	heads		heads	heads
Cows	9,400	$ 705,000	1,900	7,500
Pigs	180,000	4,500,000	140,000	40,000
Sheep	4,000	180,000	4,000	——
Chickens	480,000	288,000	480,000	——
Ducks	60,000	42,000	60,000	——
	pieces		pieces	pieces
Chicken eggs	8,000,000	160,000	4,000,000	4,000,000
Duck eggs	3,000,000	60,000	2,000,000	1,000,000
	piculs		piculs	piculs
Keng rice	708,588	——	——	——
Nu rice	149,307	——	——	——
Hsien rice	722,223	——	——	——
Barley	190,700	762,800	190,700	——
Wheat	122,670	710,416	122,670	——
Bean	83,570	458,635	83,570	——
Broad bean	9,600	38,400	9,600	——
Small green beans	3,803	26,621	3,803	——
Rapeseed	64,000	320,000	64,000	——
Maize	93,000	2,976,000	93,000	——
Kaoliang	16,500	49,500	16,500	——
Lotus seeds	400	18,000	150	250
Groundnuts	4,000	32,000	4,000	——
Cabbage	88,940	62,258	88,940	——
Turnips	995,380	1,493,070	995,380	——
Taro	126,000	126,000	126,000	——
Bamboo shoot	5,000	40,000	5,000	——
Peach	1,800	7,200	1,800	——
Yang mei	6,100	21,350	2,000	4,100
Loquat	1,500	6,750	1,500	——
Plum	1,200	3,600	1,200	——
Water melon	600	1,800	600	——
Chestnuts	1,200	12,000	1,200	——
Dates	2,000	40,000	500	1,500
Persimmon	15	45	15	——
Pomegranate	1,000	4,000	1,000	——
Prune	1,000	2,000	1,000	——

BOOK IV

AGRICULTURE AND FORESTATION

CHAPTER I

INTRODUCTION

OWING to its favorable climate and fertile soil, agriculture, forestation and stock-raising are well developed in the province of Chekiang. The principal agricultural products are rice, wheat, beans, groundnuts, corn, kaoliang, rapeseed, sesamum seed, mulberry leaf, tea, medicinal herbs, fruit, tobacco, and vegetables. Rice is the most important crop, and during this investigation it was found that a total area of 23,535,509 *mou* (consisting mostly of land along the coast and near lakes) was devoted to the cultivation of rice, with a total annual output amounting to 83,257,286 piculs. The production of other cereals, sweet potatoes, vegetables, and mulberry leaf was in each case more than 10 million piculs annually, while wheat, beans, corn, rapeseed, fruit, cotton, groundnuts, tobacco, kaoliang, tea and medicinal herbs are also grown in very considerable quantities. The pine is the most common tree in the Province, there being forests covering about 90 thousand *mou*. Fir, bamboo, tung, chestnut and other trees are found in large numbers. Hog-raising is a very popular side-line with Chekiang farmers, and there are about two million head in the Province, worth nearly 40 million dollars. Cattle, poultry, goats, and sheep are also raised in considerable numbers. Details of agricultural conditions in the Province are tabulated as follows:—

	Area (*mou*)	Output (Piculs)	Value (Dollars)
Rice	23,535,509	83,257,286	——
Wheat	9,453,188	9,592,174	——
Beans	4,791,457	7,294,105	——
Cotton	1,671,375	417,164	——
Groundnuts	130,438	218,983	——
Corn	1,804,186	2,766,710	18,432,351
Kaoliang	111,783	118,734	361,594
Sweet potatoes	1,372,502	11,441,984	17,146,291
Rapeseed	2,130,078	2,906,421	22,361,456
Sesamum seed	67,054	55,674	518,000
Mulberry leaf	2,658,193	18,366,410	——
Tea	522,336	436,402	17,847,873

	Area (*mou*)	Output (Piculs)	Value (Dollars)
Pei Mu (貝母).....	5,000	8,000	480,000
Mai Tung (麥 冬) ..	——	3,000	——
Pai Shu (白 朮)	35,503	71,005	1,338,750
Others	——	——	139,154
Peaches	——	347,193	1,994,420
Sugar cane	——	853,600	512,160
Plums	——	207,668	917,009
Oranges	——	622,716	5,065,861
Chinese strawberries	——	312,671	4,250,380
Loquats	——	76,752	514,457
Persimmon	——	153,522	671,022
Pears	——	23,300	159,150
Apricots	——	159,393	469,894
Chestnuts	——	53,201	562,185
Walnuts	——	36,950	355,750
Water chestnuts ...	——	400,000	920,000
Water melons	——	324,600	635,000
Dates	——	70,451	662,570
Vegetables	4,620,182	24,268,794	——
Tobacco	190,253	173,120	2,812,550
Cattle	——	626,000*	30,609,740
Goats & sheep	——	1,146,000*	5,350,873
Hogs	——	2,410,000*	46,629,595
Chickens	——	15,749,000*	11,759,886
Ducks	——	11,527,000*	2,246,642
Geese	——	466,000*	636,025
Eggs	——	537,000,000*	11,624,483
Pine	894,188	160,000,000†	——
Fir	596,362	56,000,000†	——
Cedar	8,859	4,000,000†	——
Tung	14,663	4,000,000†	——
Chestnut	25,154	9,000,000†	——
Bamboo	801,140	80,000,000†	——

The following list shows the principal agricultural products of various districts in Chekiang:—

HANGCHOW.—Rice, wheat, *pei mu, mai men tung* (root of *Lirriope graminifolio*), *yuan sheng* (root of *Scrupelularia olahami*), *ti huang* (root of *Rehmannia lutea*), peppermint, *chueh ming* (seed of *Cassia tora*), *tsien ching tze* (seed of *Euphorbia lathyris*), cabbage, Chinese strawberry, water chestnut, cherry, orange, peach, apricot, lotus root, plum, sugar-cane, persimmon.

*heads

†trees.

HANGHSIEN.—Rice, wheat, cotton, groundnut, sweet potato, rapeseed, corn, kaoliang, mulberry, cabbage, bamboo shoot, carrot, trao, Chinese strawberry, cherry, orange, peach, apricot, lotus-root, plum, persimmon, sugar-cane.

HAINING.—Rice, wheat, beans, cotton, rapeseed, mulberry, cabbage, carrot, bamboo-shoot, taro, watermelon.

FUYANG.—Rice, wheat, cotton, groundnut, sweet potato, rapeseed, sesamum seed, corn, kaoliang, mulberry, tea, cabbage, bamboo-shoot, carrot, taro, rape, *chiaopai* (茭白) chestnut, peach, persimmon.

YÜHANG.—Rice, wheat, beans, cotton, sweet potato, mulberry, tea, cabbage, rape, *chiaopai*.

LINGAN.—Rice, wheat, sweet potato, corn, mulberry, tea, cabbage, bamboo-shoot, turnip, taro, rape, *chiaopai*, *feitze* nut, peach, watermelon, chestnut.

YÜCH'IEN.— Rice, wheat, sweet potato, corn, kaoliang, tea, mulberry, *paitze* (root of *Angelica Anomala*), cabbage, turnip, taro, peach, walnut.

HSINTENG.—Rice, wheat, cotton, groundnut, corn, mulberry, taro, cabbage, bamboo-shoot, rape, *chiaopai*, watermelon, chestnut, peach.

CH'ANGHUA.—Rice, wheat, groundnut, rapeseed, corn, kaoliang, mulberry, tea, cabbage, bamboo-shoot, turnip, chestnut, peach, walnut.

CHIASHING.—Rice, wheat, beans, rapeseed, corn, kaoliang, mulberry, cabbage, turnip, plum, peach.

CHIASHAN.—Rice, wheat, sweet potato, rapeseed, corn, kaoliang mulberry, cabbage, turnip, plum, peach.

HAIYEN.—Rice, wheat, cotton, sweet potato, rapeseed, corn, mulberry, cabbage, bamboo-shoot, turnip, taro, *chiaopai*, *juku* (*Eleocharis plantaginea*), persimmon, peach, plum, apricot, loquat, orange, pomegranate.

TS'UNGTEH.—Rice, wheat, beans, mulberry, cabbage, bamboo-shoot, turnip, rape, taro, *chiaopai*, *juku*, mustard, peach, plum. persimmon.

P'INGHU.—Rice, wheat, cotton, rape, mulberry, cabbage.

T'UNGHSIANG.—Rice, wheat, sweet potato, rapeseed, mulberry, cabbage, bamboo-shoot, turnip, taro, juku, peach, plum.

WUSHING.—Rice, wheat, beans, groundnut, sweet potato, rapeseed, mulberry, sesamum seed, cabbage, bamboo-shoot, turnip, taro, *chiaopai*, chestnut, peach, orange, plum, persimmon, pomegranate, cherry, apricot.

CH'ANGSHING.—Rice, wheat, groundnut, mulberry, tea, cabbage, bamboo-shoot, trao, rape, Chinese strawberry, peach, plum, persimmon.

TEHTS'ING.—Rice, wheat, rapeseed, mulberry, cabbage, bamboo-shoot, turnip, taro, rape, Chinese strawberry, *chiaopai*, loquat, peach, plum.

WUK'ANG.—Rice, wheat, sweet potato, rapeseed, corn, mulberry, tea, cabbage, bamboo-shoot, turnip, *chiaopai*, taro, apricot, chestnut, orange, persimmon, loquat.

ANCHI.—Rice, wheat, groundnut, sweet potato, corn, mulberry, tea, cabbage, bamboo-shoot, turnip, taro, *chiaopai*, chestnut, apricot, plum, loquat, peach, persimmon.

NINGHSIEN.—Rice, wheat, beans, cotton, tea, *pei mu*, cabbage, bamboo-shoot, taro, rape, *chiaopai*, peach.

TS'UCH'I.—Rice, wheat, beans, cotton, sweet potato, tea, cabbage, bamboo shoot, turnip, rape, loquat, Chinese strawberry, peach, watermelon.

FENGUUA.—Rice, wheat, sweet potato, rapeseed, corn, kaoliang, mulberry, tea, cabbage, bamboo-shoot, turnip, taro, *chiaopai*, peach, chestnut, apricot, Chinese strawberry, plum.

CHENHAI.—Rice, wheat, beans, cotton, sweet potato, rapeseed, corn, tea, cabbage, turnip, taro, peach, plum, apricot, Chinese strawberry.

HSIANGSHAN.—Rice, wheat, cotton, groundnut, sweet potato, rapeseed, sesamum seed, corn, *pei mu*, kaoliang, cabbage, bamboo-shoot, turnip, taro, *chiaopai*, Chinese strawberry, chestnut, plum, peach, loquat.

NANT'IEN.—Rice, wheat, cotton, groundnut, sweet potato, rapeseed, cabbage, turnip, mustard, peach.

TINGHAI.—Rice, wheat, cotton, sweet potato, kaoliang, cabbage, turnip.

SHAOHSING.—Rice, wheat, beans, cotton, groundnut, sweet potato, rapeseed, sesamum seed, corn, kaoliang, mulberry, tea, bamboo-shoot, taro, turnip, *chiaopai*, chestnut, Chinese strawberry, persimmon, watermelon, orange, peach, apricot, plum, loquat.

HSIAOSHAN.—Rice, wheat, beans, cotton, sweet potato, rapeseed, kaoliang, mulberry, tea, cabbage, bamboo-shoot, turnip, taro, *chiaopai*, *juku*, chestnut, Chinese strawberry.

CHUCHI.—Rice, wheat, beans, sweet potato, rapeseed, sesamum seed, corn, mulberry, tea, cabbage, turnip, taro, apple, apricot, Chinese strawberry, persimmon, chestnut, water chestnut, peach, lotus root, plum, pear, *feitze* nut.

YÜYAO.—Rice, wheat, cotton, rapeseed, mulberry, tea, *ma men tung*, cabbage, turnip, rape, *chiaopai*, peach, plum, Chinese strawberry, apricot.

SHANGYÜ.—Rice, wheat, cotton, groundnut, sweet potato, rapeseed, corn, mulberry, tea, cabbage, bamboo-shoot, turnip, taro, Chinese cabbage, taro, loquat, apricot, chestnut, plum, pear.

CH'ENGHSIEN.—Rice, wheat, sweet potato, corn, mulberry, *peitze*, cabbage, taro, loquat, apricot, chestnut, plum, pear.

HSINCH'ANG.—Rice, wheat, sweet potato, rapeseed, corn, kaoliang, mulberry, tea, *peitze*, cabbage, bamboo-shoot, turnip, taro, *chiaopai*, persimmon, orange, peach, loquat, apricot.

LINHAI.—Rice, wheat, cotton, corn, kaoliang, tea, cabbage, bamboo-shoot, turnip, taro, *chiaopai*, *juku*.

HUANGYEN.—Rice, wheat, cotton, groundnut, sweet potato, rapeseed, sesamum seed, kaoliang, tea, cabbage, bamboo-shoot, turnip, taro, mustard, rape, *chiaopai*, persimmon, orange, peach, apricot, loquat, plum, chestnut, *huahung*, pear, water chestnut, Chinese strawberry.

NINGHAI.—Rice, wheat, cotton, groundnut, sweet potato, rapeseed, corn, tea, cabbage, bamboo-shoot, turnip, taro, Chinese strawberry, loquat, peach, persimmon, plum.

WENLING.—Rice, wheat, cotton, groundnut, sweet potato, rapeseed, corn, *paitze*, tea, cabbage, taro, turnip, mustard, Chinese strawberry, plum, persimmon, peach, apricot.

T'IENT'AI.—Rice, wheat, groundnut, sesamum seed, corn, kaoliang, tea, cabbage, bamboo-shoot, turnip, taro, *chiaopai*, *huahung*, date, plum, peach, persimmon, orange, loquat, apricot, chestnut.

HSIENCHÜ.—Rice, wheat, corn, tea, *paitze*, cabbage, turnip, bamboo-shoot, taro, apricot, pear, peach.

CHINHUA.—Rice, wheat, groundnut, rapeseed, sesamum seed, corn, kaoliang, tea, cabbage, bamboo-shoot, turnip, date, pomegranate, apricot, loquat, peach, chestnut, plum, cherry.

LANCH'I.—Rice, wheat, groundnut, rapeseed, corn, kaoliang, tea, cabbage, bamboo-shoot, turnip, taro, *chiaopai*, Chinese strawberry, persimmon, apricot, peach, plum, watermelon, chestnut, lotus seed, pomegranate.

TUNGYANG.—Rice, wheat, groundnut, sweet potato, rapeseed, corn, tea, *paitze*, cabbage, bamboo-shoot, turnip, taro, chestnut, lotus root, peach, date, *feitze* nut, water chestnut.

IWU.—Rice, wheat, groundnut, sesamum seed, rapeseed, sweet potato, corn, kaoliang, tea, cabbage, cabbage, taro, turnip, chestnut, Chinese strawberry, orange, date, lotus root, plum, sugar cane, apricot, peach, pear, pomegranate.

YUNGK'ANG.—Rice, wheat, groundnut, sweet potato, rapeseed, sesamum seed, corn, tea, *paitze*, cabbage, bamboo-shoot, turnip, apricot, loquat, orange, sugar cane, peach.

WUI.—Rice, wheat, groundnut, sweet potato, rapeseed, sesamum seed, corn, tea, cabbage, turnip, taro, apricot, plum, peach, loquat, chestnut.

P'UKIANG.—Rice, wheat, sweet potato, rapeseed, corn, tea, cabbage, bamboo-shoot, turnip, taro, date, pear.

T'ANGCH'I.—Rice, wheat, groundnut, rapeseed, sesamum seed, corn, kaoliang, tea, cabbage, bamboo-shoot, turnip, taro, chestnut, peach, plum, loquat.

CH'ÜHSIEN.—Rice, wheat, groundnut, rapeseed, sesamum seed, corn, kaoliang, tea, cabbage, bamboo-shoot, turnip, taro, *chiaopai*, chestnut, apricot, orange, persimmon, peach, loquat.

LUNGYU.—Rice, wheat, groundnut, rapeseed, sesamum seed, corn, cabbage, bamboo-shoot, turnip, taro, apricot, lotus root, peach, persimmon.

KIANGSHAN.—Rice, wheat, beans, groundnut, sweet potato, rapeseed, corn, kaoliang, tea, cabbage, turnip, taro, peach, orange, loquat, apricot.

CH'ANGSHAN.—Rice, wheat, groundnut, sweet potato, rapeseed, sesamum seed, corn, kaoliang, tea, cabbage, bamboo-shoot, taro, *chiaopai*, apricot, orange, chestnut, peach, persimmon, plum, loquat.

K'AIHUA.—Rice, wheat, beans, groundnut, sweet potato, rapeseed, sesamum seed, corn, tea, cabbage, bamboo-shoot, turnip, taro, chestnut, peach, apricot, pomegranate, plum, loquat.

CHIENTEH.—Rice, wheat, beans, groundnut, rapeseed, sesamum seed, corn, kaoliang, tea, cabbage, bamboo-shoot, turnip, taro, date, chestnut, apricot, peach, loquat.

SHUNAN.—Rice, wheat, sweet potato, rapeseed, corn, kaoliang, tea, cabbage, bamboo-shoot, turnip, taro, date, chestnut, persimmon, walnut, apricot, plum, peach, loquat, watermelon.

T'UNGLU.—Rice, wheat, sweet potato, rapeseed, corn, kaoliang, mulberry, tea, cabbage, bamboo-shoot, turnip, taro, plum, peach, Chinese strawberry, watermelon.

SHUIAN.—Rice, wheat, groundnut, sweet potato, rapeseed, corn, kaoliang, mulberry, tea, cabbage, bamboo-shoot, taro, turnip, sugar cane, chestnut, peach, apricot.

SHUOCH'ANG.—Rice, wheat, beans, groundnut, rapeseed, sesamum seed, corn, kaoliang, tea, cabbage, bamboo-shoot, turnip, taro, apricot, lotus seed, persimmon, plum, peach, loquat, pomegranate, Chinese strawberry, chestnut.

FENGSHUI.—Rice, wheat, groundnut, sweet potato, rapeseed, sesamum seed, corn, mulberry, tea, cabbage, bamboo-shoot, turnip, taro, apricot, chestnut.

YUNGCHIA.—Rice, wheat, cotton, groundnut, rapeseed, corn, kaoliang, tea, cabbage, bamboo-shoot, turnip, taro, *chiaopai*, loquat, Chinese strawberry, peach, orange.

JUIAN.—Rice, wheat, cotton, groundnut, rapeseed, tea, cabbage, turnip, sugar cane, orange, peach.

LOTS'ING.—Rice, wheat, cotton, sweet potato, rapeseed, tea, cabbage, Chinese strawberry, taro.

P'INGYANG.—Rice, wheat, beans, sweet potato, rapeseed, tea, cabbage, bamboo-shoot, turnip, taro, *chiaopai*, loquat, persimmon, apricot, peach, plum, orange, Chinese strawberry.

T'AISHUN.—Rice, wheat, sweet potato, tea, cabbage, bamboo-shoot, turnip, Chinese strawberry, chestnut.

YÜHUAN.—Rice, wheat, cotton, groundnut, sweet potato, rapeseed, sessmum seed, corn, kaoliang, tea, cabbage, turnip, *chiaopai*. apricot, peach, plum.

LISHUI.—Rice, wheat, beans, sweet potato, rapeseed, sesamum seed, corn, kaoliang, tea, cabbage, bamboo-shoot, turnip, taro, *chiaopai*, strawberry, persimmon, chestnut, peach, plum, apricot, pear, watermelon, pomegranate, loquat.

TS'INGT'IEN.—Rice, wheat, sweet potato, rapeseed, sesamum seed, corn, tea, cabbage, taro, *chiaopai*, chestnut, pulm, peach, loquat, persimmon, apricot.

CHINYUN.—Rice, wheat, groundnut, sweet potato, rapeseed, sesamum seed, corn, tea, cabbage, bamboo-shoot, turnip, taro, persimmon, chestnut.

SUNGYANG.—Rice, wheat, tea, cabbage, turnip, persimmon, peach, plum.

SHUICH'ANG.—Rice, wheat, groundnut, sweet potato, rapeseed, tea, kaoliang, *paitze*, cabbage, bamboo-shoot, turnip, taro, apricot, plum, persimmon, chestnut, peach, loquat.

LUNGCH'UAN.—Rice, wheat, groundnut, sweet potato, rapeseed, tea, cabbage, bamboo-shoot, turnip, taro, persimmon, plum, peach, Chinese strawberry.

CH'INGYUAN.—Rice, wheat, tea, cabbage.

YUNHO.—Rice, wheat, groundnut, sweet potato, rapeseed, sesamum seed, corn, kaoliang, tea, cabbage, bamboo-shoot, turip, *chiaopai*, taro, orange, loquat, plum, apricot, peach, pear.

HSUANP'ING.—Rice, wheat, groundnut, rapeseed, corn, tea, cabbage, bamboo-shoot, turnip, taro, plum, peach.

CHINGNING.—Rice, wheat, sweet potato, corn, tea, cabbage, bamboo-shoot, rape.

CHAPTER II

RICE

ALTHOUGH considered one of the richest rice-producing provinces in China, in recent years—owing to the rapid increase in population—Chekiang's output of rice has not been sufficient to meet the demand. Even in 1932, when the crop was unusually good, it was still not enough for local consumption. Ordinarily this Province depends upon Anhui and Kiangsu for its rice, and in bad years a considerable quantity of rice is imported from abroad.

In volume of output, and area devoted to its cultivation, rice is the most important agricultural product of Chekiang, where congenial climate and fertile soil, together with the large demand, have combined to make rice-growing by far the most important agricultural pursuit. The rice grown in Chekiang is of two different varieties, glutinous and non-glutinous. Non-glutinous, of which there are two classes, the *keng* (粳) and *hsien* (秈), is the more important as it constitutes the principal foodstuff of the people, while the glutinous, or *nu* (糯) rice, is used solely for making wine.

Chekiang, though the smallest among Chinese provinces, is traversed by a number of mountain ranges which lead to considerable differences in climate, amount of rainfall, and air currents, and consequently the methods of rice cultivation differ in almost every district. For instance, sowing takes place in some districts as early as the beginning of April, while in others it is as late as the end of June. Different varieties of rice are cultivated in different ways, but the variations of climate necessitate varied treatment for the same sort of grain grown in different districts.

The following table shows details of *keng* rice production:—

	Output per *mou* (piculs)	
	Average	1932
Hanghsien	1	1.5
Haining	2.8	2.52
Lingan	3	3.5
Yuchien	—	3
Chiahsing	2.8	2.8
Haiyen	2	2.5
Ts'ungteh	4	4.2
P'inghu	4.2	5.6
T'unghsiang	2	2.2
Wuhsing	2	2.8
Tehts'ing	2.5	2.6
Anchi	4.2	4.2
Hsiaofeng	2	2
Ninghsien	4.5	4.5
Ts'uch'i	2.5	2.5
Fenghua	5.5	4.4
Chenhai	7	4.2
Tinghai	2.8	2.5
Hsiangshan	2.1	2.1
Shaohsing	5	4
Hsiaoshan	2.1	2.14
Chuchi	2.2	2.4
Yüyao	7	7
Shangyü	2.8	1.4
Ch'enghsien	3	3
Hsingch'ang	3	3
Linhai	5.6	5.6
Huangyen	7.4	7.4
Ninghai	2.8	2.8
Wenling	7	7
T'ient'ai	1.8	2
Chinhua	4	4
Lanch'i	3.5	3.5
Tungyang	3.75	3.75
Iwu	4	4
Yungk'ang	3	3.5
P'ukiang	2.5	2.5
Ch'ühsien	1.5	1.5
Kiangshan	4.9	4.9
Ch'angshan	3.5	3.9
K'aihua	3.2	3.6
Chienteh	2.8	2.8
Shunan	3	3
T'unglu	3	4
Fenshui	3	3
Yungchia	3	3

	Output per *mou* (piculs)	
	Average	1932
Juian	4	4
Lots'ing	4.8	4.8
P'ingyang	4	6
T'aishun	3.3	3.2
Yühuan	1.8	2.5
Lishui	3	2.5
Ts'ingt'ien	5.6	5.6
Sungyang	3.2	3.2
Ch'ingyuan	3	2.7
Yunho	8.4	8.4
Hsuanp'ing	4	4
Chingning	4	4

The following table shows details of *hsien* rice production:—

	Output per *mou* (piculs)	
	Average	1932
Hanghsien	1	1.5
Haining	2.8	2.55
Fuyang	4.2	3.5
Yühang	2.7	2.7
Linan	3	3.5
Yüch'ien	3	3
Hsinteng	3	3
Ch'anghua	4	4
Chiahsing	2.1	2.8
Chiashan	2.7	3
Haiyen	1.8	2
Ts'ungteh	3.6	3.6
P'inghu	4.2	5.6
T'unghsiang	2	2.8
Wuhsing	2.5	2.8
Ch'anghsing	4.2	6
Tehts'ing	2.5	2.5
Wuk'ang	6	6
Ninghsien	6	4
Nant'ien	2	2.1
Shaohsing	3	3.5
Hsiaoshan	2	2
Chuchi	2.2	2.5
Yüyao	7	7
Shangyü	2.8	1.4

	Output per *mou* (piculs)	
	Average	1932
Hsinch'ang	3	3
Huangyen	5.6	5.6
Ninghai	2.8	2.8
Wenling	7	7
Tient'ai	1.9	2
Hsienchü	4.2	4.9
Chinhua	3.2	3
Lanch'i	2.5	2.5
Tungyang	2.5	—
Iwu	4	4
Wui	2.6	2.65
T'angch'i	1.8	1.9
Ch'ühsien	1.3	1.3
Lungyu	2.5	—
Chienteh	3	3
Shunan	2.2	2.2
Shuian	2.5	3
Shouch'ang	3	4
Fenshui	3.5	3.5
Yungchia	3	2.8
Lots'ing	4.8	—
T'aishun	3.2	2.2
Yühuan	3	3.5
Lishui	2.5	2
Ts'ingt'ien	5.6	5.6
Chinyun	3	2.5
Shuich'ang	4	4
Ch'ingyuan	3	2.7
Yunho	8.4	8.4
Chingning	3.8	3.8

The following table shows details about *nu* rice production in the districts of Chekiang:—

	Output per *mou* (piculs)	
	Average	1932
Hanghsien	1	1.5
Haining	2.8	2.52
Fuyang	2.8	2.8
Linan	3	3.5
Yüch'ien	2.5	2.5
Chiahsing	1.7	2.1

	Output per *mou* (piculs)	
	Average	1932
Chiashan	2.7	3
Haiyen	2	2.5
Ts'ungteh	3.9	3.6
P'inghu	4.2	2.8
T'unghsiang	2.2	2.2
Wuhsing	2.8	2.5
Ch'anghsing	5.7	7
Tehts'ing	2.5	2.6
Wuk'ang	6	6
Anchi	3.5	3.5
Hsiaofeng	2.2	2.2
Ninghsien	3.5	3.5
Ts'uch'i	2	2
Fenghua	5	4.2
Chenhai	7	5.6
Hsiangshan	1.9	1.9
Nant'ien	1.6	1.8
Shaohsing	5	4
Hsiaoshan	2	2.1
Chuchi	2.5	2.3
Yüyao	7	7
Shangyü	4.2	2.8
Ch'enghsien	4	4
Hsingch'ang	3	3
Linhai	5.6	5.6
Huangyen	5.6	5.6
Ninghai	2.8	2.8
Wenling	5.6	5.6
T'ient'ai	2	2.8
Hsienchü	4.2	5
Chinhua	3.2	—
Lanch'i	2	2
Tungyang	3.26	—
Iwu	3.2	3.2
Yungk'ang	2.5	2.5
Wui	1.5	1.6
P'ukiang	2.5	2.5
T'angch'i	1.8	1.85
Ch'ühsien	2	1.3
Lungyu	2	—
Kiangshan	4.3	4.2

	Output per *mou* (piculs)	
	Average	1932
Ch'angshan	7.2	8
K'aihua	1.8	3
Chienteh	3	3
Shunan	3	3
T'unglu	3	3
Shuian	3	3.2
Shouch'ang	3	3.5
Fenshui	2.8	2.8
Yungchia	3	2.8
Juian	4	4
Lots'ing	3.1	—
P'ingyang	5	6
T'aishun	2.6	2.5
Yühuan	4	4.5
Lishui	2	2
Ts'ingt'ien	4.2	4.2
Chinyun	2.8	2.4
Sungyang	1.35	1.35
Shuich'ang	3.6	3.6
Ch'ingyuan	3.3	3
Yunho	6.4	6.4
Hsuanp'ing	3	3
Chingning	3.8	3.8

AREA OF RICE FIELDS

The area of land devoted to the cultivation of rice varies with each year. Even in the same period, some disparity is usually found in different reports owing to different systems used in investigation. For instance, the area of rice fields in Chekiang was 25,359,055 *mou* in 1929 according to the investigation of the Department of Industrial and Commercial Information, while the report of the Legislative Yuan puts the figure at 27,982,000 *mou*. The investigation conducted by the Bureau of Foreign Trade in 1932 shows that the area during that year was 23,535,509 *mou*. The following table shows the area of land used for rice cultivation in each district of the Province.

	Dept. of Industrial and Commercial Information	Legislative Yuan (*mou*)			The Bureau of Foreign Trade (*mou*)			
	(*mou*)	Non-glutinous Rice	Glutinous Rice	Total	*Keng* Rice	*Hsien* Rice	*Nu* Rice	Total
Hangchow	——	——	——	——	14,301	15,394	6,426	36,121
Hanghsien	614,679	603,000	84,000	687,000	160,000	150,000	170,000	480,000
Haining	624,067	342,000	171,000	513,000	74,000	260,000	37,000	371,000
Fuyang	117,021	204,000	——	204,000	——	20,000	1,500	21,500
Yühang	193,928	294,000	51,000	345,000	——	200,000	——	200,000
Linan	122,587	143,000	19,000	162,000	94,356	46,571	18,500	159,427
Yüch'ien	94,728	73,000	7,000	80,000	43,845	25,610	7,400	76,855
Hsinteng	52,599	43,000	10,000	53,000	——	70,000	——	70,000
Ch'anghua	34.255	53,000	5,000	58,000	——	34,000	——	34,000
Chiahsing	1,133,862	489,000	277,000	766,000	390,000	540,000	150,000	1,080,000
Chiashan	519,032	492,000	61,000	553,000	——	470,000	30,000	500,000
Haiyen	561,312	64,000	361,000	425,000	252,540	280,600	28,060	561,200
Ts'ungteh	293,924	319,000	42,000	361,000	3,000	29,000	20,000	52,000
P'inghu	416,877	462,000	80,000	542,000	434,762	——	46,084	480,846
T'unghsiang	515,725	334,000	20,000	364,000	34,020	201,000	29,865	264,885
Wuhsing	1,170,852	1,483,000	230,000	1,713,000	510,400	362,000	284,000	1,156,400
Ch'anghsing	718,217	940,000	67,000	1,007,000	——	520,000	20.000	540,000
Tehts'ing	376,701	329,000	27,000	356,000	40,000	255,000	35,000	330,000
Wuk'ang	114,518	143,000	19,000	162,000	——	98,281	18,750	117,031
Anchi	163,769	307,000	87,000	393,000	140,000	——	3,200	143,200

	Dept. of Industrial and Commercial Information	Legislative Yuan (*mou*)			The Bureau of Foreign Trade (*mou*)			
	(*mou*)	Non-glutinous Rice	Glutinous Rice	Total	*Keng* Rice	*Hsien* Rice	*Nu* Rice	Total
Hsiaofeng	122,288	182,000	34,000	216,000	93,203	——	9,540	102,743
Ninghsien	802,097	881,000	55,000	936,000	508,286	20,000	125,714	654,000
Ts'uch'i	472,993	472,000	136,000	608,000	450,000	——	15,000	465,000
Fenghua	386,402	348,000	88,000	436,000	16,748	333,147	62,805	412,700
Chenhai	403,089	381,000	45,000	426,000	264,297	——	64,075	328,372
Tinghai	194,471	205,000	57,000	262,000	165,000	——	——	165,000
Hsiangshan	178,712	293,000	15,000	308,000	158,724	——	32,407	191,131
Nant'ien	41,600	19,000	8,000	27,000	——	27,537	6,430	33,967
Shaohsing	1,075,489	924,000	256,000	1,180,000	635,000	379,745	173,000	1,187,745
Hsiaoshan	354,602	460,000	186,000	646,000	270,000	80,000	30,000	380,000
Chuchi	817,144	187,000	394,000	581,000	187,000	74,500	394,000	655,500
Yüyao	610,894	605,000	110,000	715,000	5,000	31,068	4,000	40,068
Shangyü	453,090	86,000	24,000	110,000	11,225	272,596	18,148	301,969
Ch'enghsien	439,722	358,000	58,000	416,000	300,000	30,000	30,000	360,100
Hsinch'iang	201,206	217,000	——	217,000	39,621	118,863	39,621	198,005
Linhai	436,499	811,000	144,000	955,000	711,993	——	177,906	889,899
Huangyen	551,520	646,000	65,000	711,000	560,000	10,000	20,000	590,000
Ninghai	400,332	525,000	64,000	589,000	40,000	247,051	30,000	317,051
Wenling	442,850	805,000	14,000	819,000	356,284	89,070	32,414	477,768
T'ient'ai	238,628	230,000	——	230,000	8,875	192,500	37,700	239,075

	Dept. of Industrial and Commercial Information	Legislative Yuan (mou)			The Bureau of Foreign Trade (mou)			
	(mou)	Non-glutinous Rice	Glutinous Rice	Total	*Keng* Rice	*Hsien* Rice	*Nu* Rice	Total
Hsienchü	213,450	224,000	37,000	261,000	——	139,650	42,504	182,154
Chinhua	585,125	701,000	28,000	729,000	196,004	75,900	113,951	385,855
Lanch'i	451,860	214,000	——	214,000	202,444	28,889	49,769	281,102
Tungyang	463,923	253,000	101,000	354,000	222,054	133,232	88,822	444,108
Iwu	463,587	194,000	23,000	217,000	276,000	180,000	9,200	456,000
Yungk'ang	422,358	138,000	33,000	171,000	320,000	——	70,000	390,000
Wuk'ang	238,471	187,000	44,000	231,000	——	497,128	63,826	560,954
P'ukiang	281,833	166,000	——	166,000	290,000	——	30,000	320,000
T'angch'i	230,716	296,000	99,000	395,000	——	131,218	40,243	171,461
Ch'ühsien	485,195	515,000	18,000	533,000	375,834	13,595	13,598	503,024
Lungyu	369,987	277,000	86,000	363,000	——	360,000	9,800	369,800
Kiangshan	337,835	208,000	32,000	240,000	300,000	——	37,000	337,000
Ch'angshan	166,251	79,000	32,000	111,000	124,750	——	1,620	126,370
K'aihúa	178,841	149,000	——	149,000	152,484	——	3.540	156,024
Chienteh	143,054	79,000	6,000	85,000	99,906	12,331	11,100	123,340
Shunan	196,453	128,000	——	128,000	162,000	10,500	10,000	182,500
T'unglu	147,314	26,000	——	26,000	200,000	——	1,000	201,000
Shuian	163,270	57,000	13,000	70,000	——	130,000	2,000	132,000
Shouch'ang	111,367	58,000	10,000	68,000	——	97,500	24,300	121,800
Fenshui	33,244	43,000	2,000	45,000	5,400	40,500	8,100	54,000

	Dept. of Industrial and Commercial Information	Legislative Yuan (*mou*)			The Bureau of Foreign Trade (*mou*)			
	(*mou*)	Non-glutinous Rice	Glutinous Rice	Total	*Keng* Rice	*Hsien* Rice	*Nu* Rice	Trtal
Yungchia	639,425	305,000	255,000	560,000	452,000	134,082	67,041	653,123
Juian	324,221	653,000	——	653,000	480,000	——	2,400	482,400
Lots'ing	352,082	373,000	33,000	406,000	242,000	52,000	53,000	347,000
P'ingyang	508,940	666,000	81,000	747,000	510,000	——	5,000	515,000
T'aishun	70,207	61,000	11,000	72,000	32,000	17,000	16,000	65,000
Yühuan	88,134	69,000	47,000	116,000	66,433	108,782	11,690	186,905
Lishui	183,609	118,000	20,000	138,000	53,400	11,200	8,200	72,800
Ts'ingt'ien	142,515	125,000	6,000	131,000	113,600	14,200	14,200	142,000
Chinyun	81,021	119,000	16,000	135,000	——	150,000	50,000	200,000
Sungyang	162,828	107,000	12,000	119,000	16,000	——	4,000	20,000
Shuich'ang	157,584	57,000	13,000	70,000	——	140,000	14,800	154,800
Lungyu	165,781	172,000	12,000	189,000	172,000	——	25,931	197,931
Chinyuan	109,354	104,000	8,000	112,000	65,000	16,000	24,000	105,000
Yunho	69,281	51,000	14,000	65,000	1,000	65,000	1,500	67,500
Hsuanp'ing	74,496	39,000	3,000	42,000	50,000	——	20,000	70,000
Chingning	83,670	79,000	19,000	98,000	52,500	23,000	8,300	83,800
Total	25,359,055	23,488,000	4,494,000	27,982,000	12,305,289	8,065,243	3,164,977	23,535,509

ESTIMATED OUTPUT.

According to investigations made in 1932 by the Bureau of Foreign Trade, the paddy output that year was 72,542,272 piculs, Assuming that 70 catties of rice is obtained from every picul, the total rice output was 50,779,590 piculs.

PADDY OUTPUT OF CHEKIANG.

	Keng Rice (piculs)		*Nu* Rice		*Hsien* Rice		Total	
	Average Output	1932 Output	Average Output	1932 Output	Average Output	1932 Output	Average	1932
Hangchow	72,000	83,000	16,000	19,200	56,494	78,000	144,494	180,200
Hanghsien	160,000	240,000	170,000	255,000	150,000	225,000	580,000	720,000
Haining	207,000	186,480	103,600	93,240	655,200	546,000	965,800	825,720
Fuyang	——	——	4,200	4,200	84,000	148,000	88,200	112,200
Yühang	——	——	——	——	140,000	280,000	140,000	280,000
Linan	181,000	224,000	51,000	——	180,000	230,000	409,000	505,000
Yüch'ien	80,000	84,000	14,000	16,000	120,000	134,000	214,000	234,000
Hsinteng	——	——	——	——	210,000	210,000	210,000	16,000
Ch'anghua	——	——	——	——	136,000	136,000	136,000	136,000
Chiahsing	1,170,000	1,560,000	360,000	450,000	1,620,000	2,160,000	3,150,000	4,170,000
Chiashan	——	——	114,000	126,000	1,880,000	2,062,285	1,994,000	2,188,285
Haiyen	505,080	616,350	56,120	70,150	505,080	561,200	1,066,280	1,247,700
Ts'ungteh	11,760	12,600	72,800	78,400	105,560	105,560	190,120	196,560
P'inghu	1,826,000	2,434,667	193,553	258,070	——	——	2,019,553	2,692,737

	Keng Rice (piculs)		*Nu* Rice		*Hsien* Rice		Total	
	Average Output	1932 Output	Average Output	1932 Output	Average Output	1932 Output	Average	1932
T'unghsiang	592,000	834,000	54,000	60,000	267,000	310,000	913,000	1,204,000
Wuhsing	2,040,000	2,205,714	52,428	60,000	872,857	1,054,286	2,964,285	3,320,000
Ch'anghsing	——	——	126,000	140,000	2,184,000	2,912,000	2,310,000	3,052,000
Tehts'ing	100,000	104,000	87,500	91,000	562,500	650,250	750,000	845,250
Wuk'ang	——	——	75,000	75,000	393,124	393,124	468,124	468,124
Anchi	588,000	588,000	11,200	12,544	——	——	599,200	600,544
Hsiaofeng	186,406	186,406	209,880	209,880	——	——	396,286	396,286
Ninghsien	2,287,287	2,287,287	439,999	439,999	72,000	72,000	2,799,286	2,799,286
Ts'uch'i	1,125,000	1,125,000	30,000	30,000	——	——	1,155,000	1,155,000
Fenghua	921,140	753,660	314,025	263,981	1,998,882	1,332,588	3,234,047	2,350,229
Chenhai	185,009	111,005	46,952	37,561	——	——	231,961	148,566
Tinghai	360,000	697,500	——	——	——	——	360,000	697,500
Hsiangshan	333,320	333,320	39,324	39,324	——	——	372,644	372,644
Nant'ien	——	——	10,288	11,574	55,074	33,044	65,362	44,618
Shaoshing	2,222,500	2,540,000	605,500	692,000	1,329,108	1,518,980	4,157,108	4,750,980
Hsiaoshan	567,000	604,800	588,000	63,000	145,600	156,800	1,300,600	824,600
Chuchi	411,400	487,500	985,000	1,182,000	163,900	186,250	1,560,300	1,855,750
Yüyao	3,500	3,500	2,800	2,800	152,233	239,224	158,533	245,524
Shangyü	31,430	15,715	50,814	25,407	763,269	381,634	845,513	422,756
Ch'enghsien	900,000	900,000	280,000	280,000	28,000	28,000	1,208,000	1,208,000
Hsinch'ang	118,863	118,863	118,863	118,863	356,589	356,589	594,315	594,316

	Keng Rice (piculs)		*Nu* Rice		*Hsien* Rice		Total	
	Average Output	1932 Output	Average Output	1932 Output	Average Output	1932 Output	Average	1932
Linhai	398,716	2,847,972	99,627	11,624	—	—	498,343	3,559,595
Huangyen	470,400	470,000	11,200	11,200	5,600	5,600	487,200	487,200
Ninghai	16,000	16,000	12,000	12,000	988,204	988,204	1,016,204	—
Wenling	249,399	249,399	18,152	18,152	62,349	62,349	329,900	329,900
T'ient'ai	15,975	17,750	75,400	105,560	365,750	385,000	457,125	508,310
Hsienchü	—	—	14,876	17,852	58,653	68,428	73,529	86,280
Chinhua	784,016	805,400	364,643	394,400	59,190	61,400	1,207,849	1,261,200
Lanch'i	708,558	708,558	149,307	149,307	72,223	72,223	930,088	930,088
Tungyang	833,702	906,000	277,469	345,000	333,080	389,000	1,444,251	1,640,000
Iwu	1,104,000	1,104,000	29,440	29,440	288,000	288,000	1,421,440	1,421,440
Yungk'ang	960,000	1,120,000	225,000	225,000	—	—	1,185,000	1,345,000
Wuk'ang	—	—	95,739	102,122	1,292,533	1,315,389	1,388,272	1,417,511
P'ukiang	725,000	725,000	75,000	75,000	—	—	800,000	800,000
T'angch'i	—	—	72,437	74,450	236,192	249,314	308,629	323,764
Ch'ühsien	1,155,597	1,155,597	3,534	3,534	27,579	27,579	1,186,710	1,186,710
Lungyu	—	—	19,600	204,000	245,000	289,000	264,600	309,400
Kiangshan	1,470,000	1,344,000	155,400	155,400	—	—	1,625,400	1,499,400
Ch'angshan	454,090	489,020	3,402	3,856	—	—	457,492	492,876
K'aihua	490,967	533,694	9,922	10,903	—	—	500,889	544,597
Chienteh	299,718	299,718	33,300	33,300	37,002	37,002	370,020	370,020
Shunan	355,600	553,600	22,000	22,000	23,100	23,100	598,700	598,700

	Keng Rice (piculs)		*Nu* Rice		*Hsien* Rice		Total	
	Average Output	1932 Output	Average Output	1932 Output	Average Output	1932 Output	Average	1932
T'unglu	600,000	800,000	3,000	3,000	——	——	603,000	803,000
Shuian	——	——	6,000	6,400	325,000	390,000	331,000	396,500
Shouch'ang	——	——	72,900	850,500	292,500	390,000	365,400	1,240,500
Fenshui	16,200	16,200	226,800	226,800	141,750	141,750	384,750	384,750
Yungchia	1,356,000	1,356,000	201,123	1,977,148	402,246	395,429	1,959,369	3,628,577
Juian	1,920,000	1,920,000	9,600	9,600	——	——	1,929,600	1,929,600
Lots'ing	1,161,600	1,161,600	1,643,000	1,643,000	2,496,000	2,496,000	5,300,600	5,300,600
P'ingyang	2,040,000	3,060,000	25,000	30,000	——	——	2,065,000	3,090,000
T'aishun	115,500	112,000	390,000	375,000	54,400	37,400	559,900	524,400
Yühuan	119,579	142,831	46,760	52,605	326,946	381,337	493,285	576,773
Lishui	160,200	133,500	16,000	16,000	22,400	28,000	198,600	177,500
Ts'ingt'ien	63,616	63,616	7,955	7,955	7,955	7,955	79,526	79,526
Chinyun	——	——	140,000	120,000	45,000	375,000	590,000	495,000
Sungyang	400,000	400,000	8,000	8,000	——	——	408,000	408,000
Shuich'ang	——	——	53,280	53,280	560,000	560,000	613,280	613,280
Lungch'uan	722,400	722,400	108,910	108,910	——	——	831,310	831,310
Ch'ingyuan	195,000	175,500	79,200	72,000	48,000	43,200	322,200	890,700
Yunho	6,400	6,400	9,600	9,600	416,000	416,000	432,000	432,000
Hsuanp'ing	200,000	200,000	60,000	60,000	——	——	260,000	260,000
Chingning	210,000	210,000	315,400	315,400	87,400	87,400	612,800	612,800
Total	37,161,928	43,163,522	10,468,822	13,621,891	24,911,522	26,471,873	72,542,272	83,257,286

For reference the following table is given showing the results of the investigations made by the Department of Commercial and Industrial Information, Chekiang Provincial Government, and the Legislative Yuan.

	According to the Dept. of Industrial & Commercial Information			According to the Legislative Yuan		
	Outpnt of a year of good crop (piculs)	Normal crop (piculs)	1929 output (piculs)	Normal output of *keng* & *hsien* rice (piculs)	Normal output of *nu* rice (piculs)	Total (piculs)
Hanghsien	1,475,230	1,032,661	875,303	1,507,800	240,650	1,748,450
Haining	1,497,761	1,048,433	904,273	881,460	416,820	1,298,280
Fuyang	187,819	131,473	109,431	993,460	——	993,460
Yühang	387,468	271,228	226,023	858,770	140,530	999,300
Linan	244,910	171,537	122,455	377,960	52,560	430,520
Yüch'ien	200,350	140,245	89,755	204,220	16,770	220,990
Hsinteng	44,447	101,113	86,867	108,250	26,470	134,720
Ch'anghua	74,158	51,911	37,078	192,050	13,730	205,780
Chiahsing	2,993,395	2,095,377	1,201,894	1,085,020	468,060	1,553,080
Chiashan	1,401,386	980,970	832,527	1,214,150	149,690	1,363,840
Haiyen	1,347,149	943,004	696,026	149,670	841,910	991,580
Ts'ungteh	881,772	617,240	395,768	868,750	110,520	979,270
P'inghu	1,100,555	770,388	394,829	1,163,360	200,850	1,364,210
T'unghsiang	1,361,514	953,060	719,436	872,910	74,660	947,570
Wuhsing	3,091,049	2,163,734	1,210,661	3,395,990	512,350	3,908,340
Ch'anghsing	1,238,014	866,610	373,983	2,558,020	165,920	2,723,940

	According to the Dept. of Industrial & Commercial Information			According to the Legislative Yuan		
	Output of a year of good crop (piculs)	Normal crop (piculs)	1929 output (piculs)	Normal output of *keng* & *hsien* rice (piculs)	Normal output of *nu* rice (piculs)	Total (piculs)
Tehts'ing	904,082	632,857	433,206	882,200	53,220	935,420
Wuk'ang	252,374	176,662	146,792	483,190	72,740	555,930
Anchi	393,046	275,132	117,913	982,870	278,480	1,261,350
Hsiaofeng	219,962	153,973	95,867	552,180	97,850	650,030
Ninghsien	20,237,850	1,566,495	1,160,233	3,746,330	187,320	3,933,650
T'such'i	1,277,081	893,957	638,540	1,131,640	275,800	1,407,440
Fenghua	810,299	567,209	243,090	1,221,640	302,900	1,524,540
Chenhai	961,187	672,831	376,888	1,524,160	126,580	1,650,740
Tinghai	408,272	285,791	185,136	647,770	152,600	800,370
Hsiangshan	268,068	187,648	73,718	937,670	42,100	979,770
Nant'ien	50,869	35,608	11,648	35,920	16,870	52,790
Shaohsing	1,343,232	940,262	752,842	3,457,700	875,590	4,332,290
Hsiaoshan	531,903	372,332	282,617	1,556,150	629,870	2,186,020
Chuchi	2,124,823	1,487,376	885,343	647,860	1,261,420	1,909,280
Yüyao	1,220,566	854,396	508,569	1,961,480	294,990	2,256,470
Shangyü	905,194	633,636	377,164	232,980	72,930	305,910
Ch'enghsien	878,564	614,995	292,854	1,087,560	168,020	1,255,580
Hsinch'ang	362,171	253,520	105,633	763,360	——	763,360
Kiangshan	506,752	354,726	295,605	564,440	79,470	643,910
Ch'angshan	249,376	174,563	83,126	292,200	94,770	386,970

	According to the Dept. of Industrial & Commercial Information			According to the Legislative Yuan		
	Output of a year of good crop (piculs)	Normal crop (piculs)	1920 output (piculs)	Normal output of *keng* & *hsien* rice (piculs)	Normal output of *nu* rice (piculs)	Total (piculs)
K'aihua	281,422	196,995	132,775	371,930	——	371,930
Chienteh	341,890	239,323	170,945	284,160	15,100	299,260
Shunan	341,828	239,279	185,157	446,790	——	446,790
T'unglu	323,499	226,449	136,265	128,620	——	128,620
Shuian	244,905	171,434	117,554	471,650	38,990	510,640
Shouch'ang	222,513	155,759	86,978	164,940	28,860	193,800
Fenshui	79,750	55,825	53,167	152,160	6,280	158,440
Yunchia	1,221,173	854,821	203,657	1,142,600	1,061,980	2,204,580
Juian	778,130	544,691	175,079	3,004,410	——	3,004,410
Lots'ing	1,056,246	739,372	176,041	784,220	69,200	903,420
P'ingyang	1,183,285	828,300	305,682	1,664,330	202,420	1,866,750
T'aishun	168,497	117,948	84,248	121,440	23,910	145,350
Yühuan	227,386	159,170	81,480	208,170	141,560	349,730
Lishui	275,535	192,875	165,321	354,290	59,050	413,340
Linhai	1,113,073	779,151	204,063	1,752,320	261,490	2,013,810
Huangyen	1,448,795	1,014,156	362,198	2,242,900	148,670	2,391,570
Ninghai	960,401	672,281	248,206	2,164,430	263,240	2,427,670
Wenling	1,594,260	1,115,982	236,925	2,237,860	29,470	2,267,330
T'ient'ai	707,101	494,971	294,625	575.500	——	575,500
Hsienchü	448,245	313,772	138,956	734,220	88,810	823,110

	According to the Dept. of Industrial & Commercial Information			According to the Legislative Yuan		
	Output of a year of good crop (piculs)	Normal crop (piculs)	1929 output (piculs)	Normal output of *keng* & *hsien* rice (piculs)	Normal output of *nu* rice (piculs)	Total (piculs)
Chinhua	1,158,548	810,984	675,819	3,035,520	113,850	3,149,370
Lanch'i	894,683	626,278	397,176	856,120	——	856,120
Tungyang	695,884	487,119	404,077	808,540	294,660	1,103,200
Iwu	683,380	478,366	451,998	769,210	88,440	857,650
Yungk'ang	837,871	586,510	280,868	318,090	78,610	396,700
Wui	357,706	250,394	131,159	560,430	123,630	684,060
P'ukiang	517,663	362,364	274,787	439,420	——	439,420
T'angch'i	460,971	322,680	223,910	886,930	146,370	1,133,300
Ch'ühsien	727,792	509,454	363,896	1,581,930	49,660	1,631,590
Lungyu	554,980	388,486	277,490	793,340	163,760	957,100
Ts'ingt'ien	403,212	282,248	252,058	489,230	18,150	507,380
Chinyun	189,704	132,793	94,852	286,580	30,880	317,460
Sungyang	306,377	214,464	153,138	342,140	34,020	376,160
Shuich'ang	314,852	220,396	209,902	222,260	50,670	272,930
Lungch'uan	146,279	102,395	73,140	364,960	26,070	391,030
Chingyuan	328,035	229,625	164,018	271,050	18,570	339,620
Yunho	166,274	116,392	69,281	193,760	51,050	244,810
Hsuanp'ing	161,805	113,264	71,814	194,990	11,440	206,430
Chingning	125,505	87,853	52,293	252,860	64,160	317,020
Total	55,582,103	38,907,472	23,514,191	75,594,170	12,417,760	88,011,930

DEMAND AND SUPPLY

Chekiang has a population of 20,664,360, and at the rate of 3.85 piculs per person per annum, the annual consumption of rice in the Province would amount to over 74 million piculs, exceeding the normal crop by more than 20 million piculs. In other words, the local supply is about 31 per cent below actual consumption. Even when crops are good, as in 1932, the output was still about 16 million piculs short. In former years the districts of Chiahsing, Chiashan, Haiyen, Ts'ungteh, P'inghu, T'unghsiang, Wuhsing, Ch'anghsing, Tehts'ing, Wuk'ang, and Anchi were rice-exporting centers, but owing to the increase in population, only seven—Chiahsing, Chiashan, P'inghu, Ch'anghsing, Wuk'ang, T'unghsiang, and Anchi—now have any surplus rice after supplying local demand. Of the 75 districts and one municipality in Chekiang, only 18 districts are self-sufficient in the matter of rice supply, and some of the districts depend on imported rice for 90 per cent of their needs. The following table shows the demand and supply in each district of Chekiang Province:—

RICE SUPPLY AND CONSUMPTION

	Annual Consumption (piculs).	Annual Local Supply (piculs)	Excess of Consumption		Excess of Supply	
			Quantity (piculs)	%	Quantity (piculs)	%
Hangchow	1,875,963	101,146	1,774,817	94.61	—	—
Hanghsien	1,388,707	336,000	1,052,707	75.80	—	—
Haining	1,257,017	675,060	580,957	46.22	—	—
Fuyang	756,460	61,740	694,720	91.83	—	—
Yühang	476,147	98,000	378,147	79.42	—	—
Linan	298,529	286,300	12,229	4.09	—	—
Yüch'ien	228,315	149,800	78,515	34.38	—	—
Hsinteng	223,217	147,000	76,217	34.14	—	—
Ch'anghua	274,246	95,200	179,046	65.28	—	—
Chiahsing	1,509,145	2,205,000	—	—	695,855	31.55
Chiashan	726,740	1,395,800	—	—	669,060	47.93
Haiyen	752,491	746,396	6,090	0.81	—	—
Ts'ungteh	756,866	133,084	623,782	82.41	—	—
P'inghu	1,005,232	1,413,687	—	—	1,408,451	28.89
T'unghsiang	596,453	639,100	—	—	42,647	6.67
Wuhsing	2,397,129	2,075,000	322,129	13.43	—	—
Ch'anghsing	865,701	1,617,000	—	—	751,299	46.46
Tehts'ing	646,322	525,000	121,322	18.77	—	—

	Annual Consumption (piculs)	Annual Local Supply (piculs)	Excess of Consumption Quantity (piculs)	Excess of Consumption %	Excess of Supply Quantity (piculs)	Excess of Supply %
Wuk'ang	236,728	327,687	——	—	90,959	27.76
Anchi	291,176	419,440	——	—	128,264	30.57
Hsiaofeng	303,885	277,400	26,415	8.69	——	—
Ninghsien	2,653,782	1,959,500	694,282	26.16	——	—
Ts'uch'i	995,713	808,500	187,213	18.80	——	—
Fenghua	796,740	2,263,833	——	—	1,467,093	64.80
Chenhai	1,595,910	162,373	1,433,537	89.82	——	—
Tinghai	1,373,786	252,000	1,121,786	81.65	——	—
Hsiangshan	753,239	60,851	492,000	65.31	——	—
Nant'ien	78,481	45,753	32,728	41.70	——	—
Shaohsing	4,387,140	2,909,976	1,471,940	33.55	——	—
Hsiaoshan	1,787,569	910,420	877,149	49.06	——	—
Chuchi	1,889,603	1,092,210	797,393	42.19	——	—
Yüyao	2,282,966	110,973	2,171,993	95.13	——	—
Shangyü	1,049,982	591,859	458,123	43.63	——	—
Ch'enghsien	1,510,817	845,600	665,217	44.03	——	—
Hsinch'ang	852,645	416,021	436,624	51.21	——	—
Linhai	1,924,533	348,840	1,575,693	81.87	——	—
Huangyen	1,703,919	341,040	1,362,879	80.04	——	—
Ninghai	1,150,372	711,343	429,029	37.29	——	—
Wenling	1,620,577	230,930	1,389,647	85.75	——	—
T'ient'ai	925,323	319,988	602,335	65.09	——	—
Hsienchü	790,775	51,470	739,305	93.49	——	—
Chinhua	889,737	845,494	44,243	4.97	——	—
Lanch'i	958,896	651,062	307,834	32.10	——	—
Tungyang	1,735,959	1,010,976	724,980	41.76	——	—
Iwu	1,084,586	995,008	89,578	8.26	——	—
Yungk'ang	994,399	829,500	164,899	17.69	——	—
Wui	350,063	971,790	——	—	621,727	62.97
P'ukiang	813,197	560,000	253,197	31.13	——	—
T'angch'i	425,021	216,040	208,981	49.16	——	—
Ch'ühsien	1,086,745	830,697	256,048	23.56	——	—
Lungyu	622,548	185,220	537,328	86.31	——	—
Kiangshan	1,003,950	1,137,780	——	—	133,830	13.33
Ch'angshan	478,531	310,244	158,287	33.07	——	—
Kaihua	471,411	350,622	120,789	25.62	——	—
Chienteh	438,106	259,014	179,092	40.87	——	—
Shunan	761,935	419,090	342,842	44.86	——	—
T'unglu	420,106	422,100	——	—	1,994	0.47
Shuian	478,170	231,700	246,470	51.54	——	—
Shouch'ang	254,398	255,780	——	—	1,382	0.54
Fenshui	151,219	269,325	——	—	118,109	43.85
Yungchia	2,428,586	1,371,558	1,057,028	43.52	——	—
Juian	1,803,457	1,350,720	452,737	25.10	——	—

	Annual Consumption (piculs)	Annual Local Supply (piculs)	Excess of Consumption Quantity (piculs)	Excess of Consumption %	Excess of Supply Quantity (piculs)	Excess of Supply %
Lots'ing	1,309,245	3,710,420	——	—	2,401,175	64.71
P'ingyang	2,382,225	1,445,500	936,720	39.32	——	—
T'aishun	584,614	391,930	912,684	33.14	——	—
Yühuan	638,507	345,300	293,207	45.92	——	—
Lishui	447,500	139,020	308,486	68.93	——	—
Ts'ingt'ien	841,107	55,668	785,439	94.57	——	—
Chinyun	669,904	413,000	206,904	30.88	——	—
Sungyang	435,235	285,600	149,635	34.38	——	—
Shuich'ang	421,237	429,295	——	—	8,060	1.91
Lungchuan	530,381	581,917	——	—	51,536	8.85
Ch'ingyuan	363,803	225,540	138,263	38.00	——	—
Yunho	245,040	302,400	——	—	57,360	18.96
Hsuanp'ing	272,080	182,000	90,080	33.11	——	—
Chingning	416,272	428,960	——	—	12,688	1.29
Total	74,193,488	50,779,590	23,413,898	31.56	——	—

MARKET CENTRES

The districts of Yungchia, Lanchi, Chiahsing, and the towns of Linpu (臨浦), Huhsü (湖墅), and Hsiashih (硤石) are market centers for rice. There are 41 rice hongs in Yungchia, doing business to the extent of $654,.063 in 1932 according to the Bussiness-Tax Bureau, but actually the amount must have been much greater, as nearly two million piculs of rice were imported into Chekiang through this centre. In the city of Lanch'i there are 43 rice hongs, their annual turnover in 1932 being $2,168,-900. All the districts in the former prefecture of Shaohsing buy and sell rice in Lanch'i. The village of Huhsü, though situated in the district of Hangchow, supplies a considerable quantity of rice to Shaohsing and Ninghsien annually, as it is the distributing centre for rice grown in Anhui and Kiangsu. Hsiashih also handles large quantities of Kiangsu and Anhui rice every year, with Hangchow, Chiahsing, and Wuhsing as principal purchasers. The rice hong in Chiahsing are scattered about in the various localities where local rice can be conveniently bought and sold, and this is a very rich rice-producing area, the number of hongs being about 400.

CHAPTER III

BARLEY AND WHEAT

NEXT in importance to rice among Chekiang's agricultural products come barley and wheat, which, being cultivated in rotation with rice, are found in all parts of the Province. Barley is largely produced in Shangyü, Wenling, Ninghai, Iwu, Yungk'ang, Linhai, and P'ingyang, the last two being also large wheat-producing districts, no less important than Haining, Shaohsing, Yungchia, T'ient'ai, Chuchi and Chühsien.

Barley and wheat are sown at about the same time, ranging in different districts from the autumnal equinox (September 24) to "Great Snow" (December 8), according to climate, soil, and kind of seed. The earliest variety is harvested during the latter half of April, and the latest, about the end of May. After harvesting the land is often turned into rice fields, though both wheat and barley often alternate with beans, rape, maize, cotton, millet, melons, potatoes, and kaoliang.

The yield of barley per *mou* varies greatly with weather conditions, soil, and character of fertilizer used. In normal years about 35 per cent of the fields produce an annual crop of from 50 to 100 catties, 36.67 per cent, from 101 to 150 catties, 8.35 per cent, from 151 to 200 catties, and 20 per cent, more than 200 catties. In Wenling and Yunho, where the soil is particularly well suited to barley, the yield far exceeds and other district of the Province, amounting to 390 catties per *mou* in the former and 585 catties in the latter. With regard to wheat production, these two districts likewise lead in quantity, the annual yield per *mou* often exceeding 200 catties, as against from 50 to 100 catties in districts of medium producing capacity.

The total area under wheat and barley cultivation was 9,500,000 *mou*, according to an estimate made by the Bureau of Foreign Trade. A much larger figure, 13,562,000 *mou*, was arrived at by the Bureau of Statistics in the Legislative Yuan. Despite the great discrepancy, both estimates acknowledge the premier position of Linhai as shown in the following table:

BARLEY AND WHEAT AREA (*MOU*)

	Estimate by Bureau of Foreign Trade			Estimate by Legislative Yuan		
	Barley	Wheat	Total	Barley	Wheat	Total
Hangchow Municipality	2,000	3,218	5,218	——	——	——
Hanghsien	13,000	89,000	102,000	72,000	193,000	265,000
Haining	——	280,000	280,000	——	459,000	459,000
Fuyang	500	10,000	10,500	——	81,000	81,000
Yühang	——	2,000	2,000	——	175,000	175,000
Linan	23,000	16,000	39,000	47,000	94,000	141,000
Yuch'ien	400	1,334	1,734	8,000	88,000	96,000
Hsinteng	100	2,500	2,600	28,000	29,000	57,000
Ch'anghua	17,000	10,000	27,000	——	60,000	60,000
Chiahsing	——	10,000	10,000	——	456,000	456,000
Chiashan	——	6,000	6,000	——	128,000	128,000
Haiyen	240	2,248	2,488	161,000	——	161,000
Ts'ungteh	3,000	140,000	143,000	18,000	102,000	120,000
P'inghu	——	37,520	37,520	——	159,000	159,000
T'unghsiang	——	100,000	100,000	——	113,000	113,000
Wuhsing	——	78,239	78,239	21,000	104,000	125,000
Ch'anghsing	——	25,000	25,000	——	134,000	134,000
Tehts'ing	1,200	20,000	21,200	5,000	5,000	10,000
Wuk'ang	——	1,892	1,892	5,000	33,000	38,000

BARLEY AND WHEAT AREA (*MOU*) *(Continued)*

	Estimate by Bureau of Foreign Trade			Estimate by Legislative Yuan		
	Barley	Wheat	Total	Barley	Wheat	Total
Anchi	1,200	2,400	3,600	46,000	77,000	123,000
Hsiaofeng	80	8,500	8,580	15,000	108,000	123,000
Ninghsien	11,000	11,000	22,000	11,000	11,000	22,000
Tsuch'i	86,000	16,000	102,000	8,000	40,000	48,000
Fenghua	2,094	2,000	4,094	10,000	21,000	31,000
Chenhai	——	39,397	39,397	——	45,000	45,000
Tinghai	——	19,000	19,000	11,000	4,000	15,000
Hsiangshan	956	1,548	2,504	4,000	116,000	120,000
Nant'ien	1,060	4,570	5,630	4,000	7,000	11,000
Shaohsing	170,000	355,000	525,000	43,000	441,000	484,000
Hsiaoshan	160,000	70,000	230,000	44,000	132,000	176,000
Ch'uch'i	168,000	325,000	493,000	168,000	325,000	493,000
Yüyao	8,158	20,393	28,551	——	124,000	124,000
Shangyü	21,573	45,234	66,807	116,000	147,000	263,000
Ch'enghsien	5,000	50,000	55,000	19,000	128,000	147,000
Hsinch'ang	5,000	79,700	84,700	3,000	89,000	92,000
Linhai	333,469	222,345	555,814	445,000	667,000	1,112,000
Huangyen	20,000	70,000	90,000	55,000	83,000	138,000
Ninghai	8,000	16,000	24,000	284,000	142,000	426,000

BARLEY AND WHEAT AREA (*MOU*) (*Continued*)

	Estimate by Bureau of Foreign Trade			Estimate by Legislative Yuan		
	Barley	Wheat	Total	Barley	Wheat	Total
Wenling	55,680	63,380	119,060	216,000	72,000	288,000
T'ient'ai	82,750	2,899,500	2,982,250	99,000	164,000	263,000
Hsienchü	51,612	166,981	218,593	50,000	343,000	393,000
Chinhua	59.190	38,800	97,990	47,000	56,000	103,000
Lanch'i	191,070	122,670	313,740	238,000	297,000	535,000
Tungyang	73,500	3,450	76,950	184,000	215,000	399,000
Iwu	143,340	75,670	219,010	240,000	200,000	440,000
Yungk'ang	49,000	15,000	64,000	146,000	73,000	219,000
Wui	44,552	45,076	89,628	51,000	51,000	102,000
P'ukiang	100,000	240,000	340,000	29,000	58,000	87,000
T'angch'i	65,112	34,218	99,330	47,000	59,000	101,000
Ch'ühsien	22,519	68,748	91,267	253,000	309,000	562,000
Lungyu	5,000	20,000	25,000	55,000	101,000	156,000
Kiangshan	25,000	90,000	115,000	267,000	134,000	401,000
Ch'angshan	4,350	75,050	79,400	82,000	73,000	155,000
K'aihua	48,840	88,800	137,640	——	30,000	30,000
Chienteh	12,500	27,500	40,000	47,000	53,000	100,000
Shunan	33,000	100,000	133,000	80,000	48,000	128,000
T'unglu	500	6,000	6,500	43,000	86,000	129,000
Shuian	30,000	70,000	100,000	79,000	25,000	104,000

BARLEY AND WHEAT AREA (*MOU*) *(Continued)*

	Estimate by Bureau of Foreign Trade			Estimate by Legislative Yuan		
	Barley	Wheat	Total	Barley	Wheat	Total
Shouchang	6,300	45,000	51,300	14,000	2,000	16,000
Fenshui	1,000	5,000	6,000	2,000	16,000	18,000
Yungchia	81,965	120,932	202,897	115,000	412,000	527,000
Juian	9,600	14,400	24,000	——	88,000	88,000
Lots'ing	——	94,000	94,000	82,000	192.000	274,000
P'ingyang	50,000	20,000	70,000	90,000	189,000	279,000
T'aishun	1,000	1,300	2,300	15,000	23,000	38,000
Yühuan	2,800	20,385	23,185	21,000	29,000	50,000
Lishui	48,120	6,120	54,240	68,000	46,000	114,000
Ts'ingt'ien	14,200	42,600	56,800	——	50,000	50,000
Chinyun	70,000	40,000	110,000	97,000	58,000	155,000
Sungyang	3,450	17,690	21,140	49,000	146,000	195,000
Shuichang	2,800	1,500	4,300	2,000	79,000	81,000
Lungch'uan	38,000	35,000	73,000	——	12,000	12,000
Ch'ingyuan	10,000	30,000	40,000	1,000	3,000	4,000
Yunho	5,000	4,000	9,000	21,000	13,000	34,000
Hsuanp'ing	1,800	5,400	7,200	21,000	17,000	38,000
Ch'ingning	——	400	400	15,000	27,000	42,000
Total	2,505,580	6,947,608	9,453,188	4,566,000	8,996,000	13,562,000

ESTIMATED PRODUCTION

There is again a great difference between the figures supplied by the Bureau of Foreign Trade and the Bureau of Statistics, Legislative Yuan, with regard to the normal annual output of barley and wheat in Chekiang, the former estimate being 10,881,230 piculs, and the latter 17,668,620 piculs. There is one point upon which both agree, namely, that the production of wheat is larger than that of barley. T'ient'ai stands foremost as a wheat district, followed by T'unghsiang and Ts'ingt'ien, while Linhai raises the most barley, with Hsienchü, Hsiaoshan, and Chuch'i next. Details are shown in the following table:

WHEAT AND BARLEY PRODUCTION (PICULS)

	Estimate by Bureau of Foreign Trade						Estimate by Legislative Yuan		
	Barley		Wheat		Total		Barley	Wheat	Total
	Normal	1932	Normal	1932	Normal	1932	Normal	Normal	Normal
Hangchow Municipality	3,000	3,000	5,470	5,470	8,470	8,470	——	——	——
Hanghsien	13,000	15,000	89,000	89,000	102,000	104,000	59,350	386,000	445,350
Haining	——	——	291,200	291,200	291,200	291,200	——	403,510	403,510
Fuyang	455	455	13,000	13,000	13,455	13,455	——	162,860	162,860
Yühang	——	——	1,560	1,560	1,560	1,560	——	148,430	148,430
Linan	27,600	27,600	19,200	19,200	46,800	46,800	57,050	136,550	193,600
Yüch'ien	640	640	20,010	20,010	20,650	20,650	8,280	72,070	80,350
Hsinteng	200	200	5,000	5,000	5,200	5,200	33,010	47,220	80,230
Ch'anghua	34,000	34,000	10,000	10,000	44,000	44,000	——	64,340	64,340

WHEAT AND BARLEY PRODUCTION (PICULS) *(Continued)*

	Estimate by Bureau of Foreign Trade						Estimate by Legislative Yuan		
	Barley		Wheat		Total		Barley	Wheat	Total
	Normal	1932	Normal	1932	Normal	1932	Normal	Normal	Normal
Chiahsing	——	——	15,600	15,600	15,600	15,600	62,070	465,290	527,360
Chiashan	——	——	7,800	9,360	7,800	9,360	——	127,940	127,940
Haiyen	624	624	3,507	3,799	4,131	4,423	224,830	——	224,830
Ts'ungteh	2,340	1,950	109,200	91,000	111,540	92,950	11,930	84,010	95,940
P'inghu	——	——	52,528	56,280	52,528	56,280	——	213,310	213,310
Tunghsiang	——	——	809,000	709.000	809,000	709,000	——	105,530	105,530
Wuhsing	——	——	78,239	156,478	78,239	156,478	26,320	93,990	120,310
Ch'anghsing	——	——	26,000	26,000	26,000	26,000	——	146,440	146,440
Tehts'ing	1,200	1,320	24,000	24,000	25,200	25,320	5,920	5,920	11,840
Wuk'ang	——	——	984	984	984	984	5,580	45,280	50,860
Anchi	780	936	1,560	1,872	2,340	2,808	57,130	99,060	156,190
Hsiaofeng	120	96	13,600	12,000	13,720	12,196	29,340	189,190	218,530
Ninghsien	19,830	19,830	15,870	15,870	35,700	35,700	15,870	19,820	35,700
Tsuch'i	129,000	129,000	96,000	96,000	225,000	225,000	6,470	32,770	39,240
Fenghua	4,397	3,769	4,400	3,000	8,797	6,769	14,540	23,480	38,020
Chenhai	——	——	20,486	179,166	20,486	179,166	——	65,100	65,100
Tinghai	——	——	29,640	29,640	29,640	29,640	22,780	6,490	29,270
Hsiangshan	2,487	2,487	3,019	3,019	5,506	,5,506	4,630	138,800	143,430
Nant'ien	1,060	1,272	4,570	5,484	5,630	6,756	3,170	5,290	8,460
Shaohsing	154.700	176,800	369,200	369,200	523,900	546,000	42,670	595,250	637,920
Hsiaoshan	374,400	332,800	72,800	63,700	447,200	396,500	38,590	324,910	363,500

WHEAT AND BARLEY PRODUCTION (PICULS) *(Continued)*

	Estimate by Bureau of Foreign Trade						Estimate by Legislative Yuan		
	Barley		Wheat		Total		Barley	Wheat	Total
	Normal	1932	Normal	1932	Normal	1932	Normal	Normal	Normal
Chuch'i	327,600	327,600	634	634	328,234	328,234	221,140	445,540	666,680
Yüyao	21,211	21,211	53,012	53,012	74,223	74,223	——	164,700	164,700
Shangyü	28,045	28,045	58,804	58,804	86,849	86,849	261,550	309,820	571,370
Ch'enghsien	13,000	13,000	84,500	97,500	97,500	110,500	18,800	170,070	138,870
Hsinchang	12,500	10,000	79,700	79,700	92,200	89,700	4,740	155,650	160,390
Linhai	566,894	566,894	289,049	289,049	855,943	855,943	497,870	666,790	1,164,660
Huangyen	52,000	52,000	118,300	109,200	170,300	161,200	71,470	112,190	183,660
Ninghai	10,400	10,400	20,800	20,800	31,200	31,200	468,550	232,860	701,410
Wenling	216,152	216,152	247,182	247,182	463,334	463,334	299,710	85,530	385,240
T'ient'ai	66,200	70,338	811,860	86,985	878,060	157,323	66,100	136,470	202,571
Hsienchü	545,023	545,023	173,660	173,660	718,683	718,683	70,350	445,410	515,760
Chinhua	59,190	——	46,560	——	105,750	——	91,140	106,560	197,700
Lanch'i	190,700	190,700	122,670	122,670	313,370	313,370	285,370	386,440	671,810
Tungyang	73,500	——	5,175	——	78,675	——	251,440	284,030	535,470
Iwu	229,344	229,344	75,670	75,670	305,014	305,014	268,740	211,960	480,700
Yungk'ang	58,800	58,800	18,000	18,750	76,800	77,550	349,390	116,470	465,860
Wui	106,925	118,261	40,568	38,315	147,493	156,576	38,210	34,640	72,850
P'ukiang	150,000	——	249,600	——	399,600	——	24,650	49,300	73,950
T'angch'i	78,134	84,646	54,759	61,592	132,893	146,238	47,300	70,950	118,250
Chühsien	22,519	22,519	80,435	80,435	102,954	102,954	321,260	432,840	754,100
Lungyu	5,000	——	20,000	——	25,000	——	53,260	116,000	169,260

WHEAT AND BARLEY PRODUCTION (PICULS) *(Continued)*

	Estimate by Bureau of Foreign Trade						Estimate by Legislative Yuan		
	Barley		Wheat		Total		Barley	Wheat	Total
	Normal	1932	Normal	1932	Normal	1932	Normal	Normal	Normal
Kiangshan	26,200	26,200	93,600	93,600	119,800	119,800	205,610	117,490	323,100
Ch'angshan	10,179	10,179	48,783	48,783	58,962	58,962	98,560	87,190	185,750
K'aihua	48,840	57,608	88,000	88,000	136,840	145,608	——	29,770	29,770
Chienteh	13,000	13,000	28,600	28,600	41,600	41,600	47,110	70,180	117,290
Shunan	46,200	46,200	160,000	160,000	206,200	206,200	79,750	38,300	118,050
T'unglu	1,000	1,000	12,000	12,000	13,000	13,000	59,160	118,330	177,490
Shuian	30,000	30,000	70,000	70,000	100,000	100,000	47,170	40,250	874,200
Shouch'ang	6,300	6,300	45,000	45,000	51,300	51,300	14,420	23,930	38,350
Fenshui	1,200	1,200	6,000	6,000	7,200	7,200	1,310	16,760	18,070
Yungchia	98,358	81,965	96,746	96,746	195,104	178,711	191,380	489,980	681,360
Juian	5,760	7,680	10,080	11,520	15,840	19,200	——	215,750	215,750
Lots'ing	——	——	45,000	——	45,000	——	55,190	167,220	222,410
P'ingyang	195,000	195,000	78,000	78,000	273,000	273,000	280,690	589,440	870,130
T'aishun	600	600	1,040	1,170	1,640	1,770	24,290	38,710	63,000
Yühuan	2,520	2,240	14,270	16,308	16,790	18,548	41,630	58,290	99,920
Lishui	72,180	57,744	6,120	4,896	78,300	62,640	101,700	64,300	166,000
Ts'ingt'ien	36,920	36,920	664,560	664,560	701,480	701,480	——	75,630	75,630
Chinyun	70,000	56,000	48,000	40,000	118,000	96,000	118,960	69,010	187,970
Sungyang	29,152	29,152	1,061	1,061	30,213	30,213	48,600	174,960	223,560
Shuich'ang	2,800	3,080	1,350	1,500	4,150	4,580	5,000	238,140	243,140
Lungch'uan	57,000	60,000	52,500	58,000	109,500	118,000	——	15,370	15,370

WHEAT AND BARLEY PRODUCTION (PICULS) *(Continued)*

	Estimate by Bureau of Foreign Trade						Estimate by Legislative Yuan		
	Barley		Wheat		Total		Barley	Wheat	Total
	Normal	1932	Normal	1932	Normal	1932	Normal	Normal	Normal
Chingyuan	8,000	8,000	24,000	24,000	32,000	32,000	1,130	3,450	4,580
Yunho	29,250	26,000	20,800	20,800	50,050	46,800	33,070	19,320	52,390
Hsienp'ing	2,700	2,700	5,400	5,400	8,100	8,100	21,200	15,260	36,460
Ch'ingning	——	——	800	800	800	800	12,270	21,700	33,970
Total	4,396,129	4,075,480	6,485,101	5,516,694	10,881,230	9,592,174	5,926,810	11,741,810	17,668,620

DISPOSAL OF CROPS

Chekiang is barely self-supporting in wheat and barley supplies, there being only nine districts—Haining, P'inghu, Huangyen, Hsienchü, T'angch'i, Chühsien, Lungyu and K'aihua—which make occasional shipments to Shanghai via Lanch'i, Ninghsien, Shaohsing, etc.

Wheat and barley prices vary greatly in different districts, due partly to differences in transportation facilities and partly to the absence of any standard unit of measure. Thus, in some localities, wheat may cost seven dollars "per picul", while in others only about two dollars may be charged for what is also described as a picul.

Farmers do not often sell their barley, which is excellent feed for hogs, but wheat is sold to cereal and flour merchants.

APPROXIMATE PRICE (PER PICUL) OF WHEAT AND BARLEY

	Barley	Wheat
Hangchow Municipality	$3.50	$4.50
Hanghsien	5.00	7.00
Haining	—	5.00
Fuyang	4.00	5.20
Yühang	—	8.00
Linan	4.00	6.00
Yüch'ien	2.00	2.50
Hsinteng	3.00	4.00
Ch'anghua	3.00	3.50
Chiahsing	—	6.00
Chiashan	—	5.50
Haiyen	2.50	3.50
Ts'ungteh	5.00	5.00
P'inghu	—	4.00
T'unghsiang	—	5.00
Wuhsing	—	5.00
Ch'anghsing	—	6.00
Tehts'ing	3.50	4.00
Wuk'ang	—	3.50
Anchi	5.00	5.50
Hsiaofeng	2.50	3.50
Ninghsien	3.00	3.50
Ts'uch'i	3.00	3.50
Fenghua	3.00	3.50
Chenhai	—	3.20
Tinghai	—	6.00
Hsiangshan	2.50	3.00
Nant'ien	2.85	4.00
Shaohsing	4.75	5.50
Hsiaoshan	3.00	5.00
Chuch'i	2.75	3.00
Yüyao	2.00	2.00
Shangyü	5.00	6.00
Ch'enghsien	3.00	5.00
Hsinch'ang	2.50	3.00
Linhsi	3.40	4.00
Huangyen	4.00	5.00
Ninghai	2.00	2.20
Wenling	4.50	5.50
T'ient'ai	4.00	5.00
Hsienchü	4.00	5.00
Chinhua	4.00	4.80
Lanch'i	4.00	4.80
Tungyang	6.50	6.00
Iwu	3.80	4.00

	Barley	Wheat
Yungk'ang	3.50	6.00
Wui	2.30	4.00
P'ukiang	4.00	5.00
T'angch'i	3.00	3.80
Chühsien	3.00	4.00
Lungyu	3.20	3.80
Kiangshan	4.50	4.50
Hsiangshan	3.00	5.00
Kaihua	3.00	4.50
Chienteh	3.20	6.00
Shunan	2.00	4.00
T'unglu	2.50	4.00
Shuian	4.00	5.00
Souch'ang	3.20	3.70
Fenshui	4.00	4.20
Yungchia	3.00	4.00
Juian	3.50	5.50
Lots'ing	—	4.00
P'ingyang	3.50	5.00
T'aishun	5.50	6.60
Yühuan	3.00	4.00
Lishui	3.80	4.00
Ts'ingt'ien	3.50	4.50
Chinyun	3.20	4.50
Sungyang	4.00	5.00
Shuich'ang	3.00	5.00
Lungch'uan	3.00	5.00
Ch'ingyuan	6.00	6.00
Yunho	3.00	4.00
Hsuanp'ing	3.40	4.50
Chingning	—	4.50

CHAPTER IV

BEANS

MANY varieties of beans are grown in Chekiang. Soya or "yellow beans," *mao tou* (毛豆), are oval-shaped, green when young and yellow when old. The former is a table delicacy, while the old beans are used for extracting oil. Peas, generally known as "green beans" in other provinces, are known in Chekiang as *chuan tou* (蚕豆), a name given to broad beans throughout China except in this province, where they are known as *ta tou* (大豆), which means "big beans, or *lo han* bean (羅漢豆). There are no special local names for small green and red beans and black beans.

PLANTING METHODS

Broadbeans and peas are sown in winter together with wheat, and since a dry soil is always preferred in growing beans as well as wheat, trenching is resorted to. Cultivation is commenced after the rice harvest. The usual arrangement is to divide a field into sections with trenches between, wheat, clover and beans being grown side by side, but wheat and beans are often planted alternately in the same patch.

Soya beans are sown in late spring or early summer, and picked in July, August, September, or October, according to variety. Turnips, rape, wheat, maize, peas, broadbeans, sweet potatoes, and clover often alternate with soya beans.

AREA UNDER CULTIVATION

The area under soya beans in Chekiang province amounts to 2,465,948 *mou*, of which Chuchi and Kiangshan have the largest share, with 258,510 and 187,660 *mou* respectively Other important districts are P'ukiang, Ts'ungteh, K'aihua, Shouch'ang, T'unghsiang and Lishui, each with more than 100,000 *mou* of soya beans.

T'unghsiang stands first as a broad bean district, followed by Wuhsing, Shaohsing, and Hanghsien. The broadbean area of the whole Province is estimated at 2,108,965 *mou.*

Not much land is devoted to cultivation of small green beans in Chekiang, the total area, amounting to only 187,712 *mou.* Shaohsing is considered first among producing districts, with K'aihua and P'ingyang next.

Small red beans are grown in only 20 districts. With the exception of Hanghsien, which has about 18,000 *mou* under this crop, the other districts have at most 2,260 *mou.*

BEAN AREA *(MOU)* IN CHEKIANG

	Soya Beans	Broad Beans	Small Green Beans	Small Red Beans	Total
Hanghsien	70,000	130,000	1,000	18,000	219,000
Haining	90,000	200,000	——	——	290,000
Fuyang	40,000	20,000	——	2,000	62,000
Yühang	6,000	115,000	——	——	121,000
Linan	2,900	——	——	——	2,900
Yuch'ien	33,334	5,000	——	——	38,334
Hsinteng	3,000	——	——	——	3,000
Ch'anghua	12,000	8,000	——	——	20,000
Chihsing	80,000	200,000	——	——	280,000
Haiyen	72,846	6,480	80	330	79,736
Ts'ungteh	120,000	170,000	——	——	290,000
P'inghu	42,000	——	——	——	42,000
T'unghsiang	100,000	200,000	——	300	300,300
Wuhsing	47,240	190,776	23,500	1,840	263,356
Ch'anghsing	2,000	25,000	——	——	27,000
Tchts'ing	10,000	80,000	2,000	1,300	93,300
Wuk'ang	22,659	32,446	1,432	——	56,537
Anchi	2,000	1,500	——	——	3,500
Hsiaofeng	260	450	40	——	750
Ninghsien	12,000	15,000	——	——	27,000
Ts'uch'i	——	8,000	——	——	8,000
Fenghua	2,500	1,300	——	——	3,800
Chenhai	19,508	13,289	14,355	——	47,152
Tinghai	3,200	——	——	——	3,200
Hsiangshan	3,397	624	624	624	5,269
Nant'ien	5,000	190	150	——	5,340
Shaohsing	1.300	150,000	35,000	50	186,350

	Soya Beans	Broad Beans	Small Green Beans	Small Red Beans	Total
Hsiaoshan	40,000	67,000	200	——	107,200
Chuchi	258,510	500	400	300	259,710
Yüyao	40,000	75,000	1,000	——	116,000
Shangyü	2,000	3,500	——	——	5,500
Ch'enghsien	19,000	——	——	——	19,000
Hsinch'ang	12,500	8,600	940	——	22,040
Linhai	——	57,000	——	——	57,000
Huangyen	6,000	7,000	1,000	300	14,300
Ninghai	500	3,000	——	——	3,500
Wenling	1,900	1,000	100	——	3,000
T'ient'ai	21,900	24,150	——	——	46,050
Hsienchü	75,880	5,730	——	——	81,610
Chinhua	33,482	17,700	4,820	——	56,002
Lanch'i	83,570	12,000	28,338	——	123,908
Tungyang	3,450	——	——	——	3,450
Iwu	1,200	2,000	1,000	500	4,700
Yungk'ang	2,600	——	200	100	2,900
Wui	46,305	5,553	1,370	——	53,228
P'ukiang	150,000	——	——	——	150,000
T'angch'i	22,624	583	1,415	40	24,662
Ch'ühsien	14,909	9,240	200	200	24,549
Lungyu	40,000	——	——	——	40,000
Kiangshan	187,660	——	——	——	187,660
Ch'angshan	12,430	14,230	3,560	280	30,500
K'aihua	152,000	32,900	32,900	2,260	220,060
Chienteh	25,000	75,000	200	——	100,200
Shunan	40,000	5,000	——	——	45,000
Tunglu	3,500	1,800	——	——	5,300
Shuian	20,000	——	——	——	20,000
Shouch'ang	120,000	5,000	——	——	125,000
Fenshui	400	1,000	380	——	1,780
Yungchia	13,566	9,826	——	——	22,992
Juian	25,000	2,000	——	——	27,000
Lots'ing	——	——	——	——	——
P'ingyang	——	80,000	30,000	——	110,000
T'aishun	4,000	——	——	——	4,000
Yühuan	550	600	400	50	1,600
Lishui	100,000	2,600	500	——	103,100
Ts'ingt'ien	7,000	4,000	——	——	11,000
Chinyun	4,500	2,500	——	——	7,000
Shuich'ang	16,000	——	100	——	16,100
Shuichang	9,000	——	150	150	9,300
Lungch'uan	98	98	58	8	262

	Soya Beans	Broad Beans	Small Green Beans	Small Red Beans	Total
Yunho	1,500	——	250	200	1,950
Hsuanping	270	200	50	——	520
Chingning	44,000	——	——	——	44,000
Total.....	2,465,948	2,108,965	187,712	28,832	4,791,457

DETAILS OF PRODUCTION

The production of broad beans is greater than that of any other variety of beans. Against a normal annual production of 3,117,705 piculs, the yield in 1932 amounted to 4,274,234 piculs, of which Chiahsing, Ninghsien, P'ingyang, and Shaohsing contributed the greatest share, amounting to 308,060, 288,000, 256,000 and 240,000 piculs respectively. Among other important districts are Yühang, Ts'ungteh, Hanghsien, Haining, Wuhsing and Linhai, the first two producing about 220,000 piculs, and the remainder, more than 100,000 piculs each.

Soyal beans rank next to broad beans in quantity of production. In normal years Chekiang produces about 2,462,280 piculs annually, but in 1932 a slight increase was shown. Of the total crop of 2,499,020 piculs that year, 330,893 piculs came from Chuchi, the most important district in the Province. Supplies from other districts included 192,000 piculs from Shouch'ang, 165,141 from Kiangshan, and 116,200 from Tsungteh.

The annual production of small green beans amounts to about 517,600 piculs in normal years, but 1932 was a bad year for this crop, only 482,551 piculs being picked. The fact that only 35 districts produce small green beans explains the small output of the Province. Chenhai always ranks first in production, amounting to about 580,700 piculs in normal years and to 356,904 in 1932. P'ingyang and K'aihua rank second and third, contributing 48,600 and 39,480 piculs respectively in 1932.

The production of small red beans is still smaller than that of small green beans, amounting to only about 38,300 piculs in normal years.

COMPARISON OF BEAN PRODUCTION (PICULS)

	Soya Beans		Broad Beans		Small Green Beans		Small Red Beans		Total Output	
	Normal	1932	Normal	1932	Normal	1932	Normal	1932	Normal	1932
Hangchow Municipality	14,000	14,000	168,000	168,000	—	—	—	—	182,000	182,000
Hanghsien	56,000	56,000	156,000	156,000	1,000	1,000	14,400	14,400	227,400	227,400
Haining	86,400	144,000	160,000	160,000	—	—	—	—	246,400	304,000
Fuyang	40,000	40,000	20,000	20,000	—	—	16,000	16,000	76,000	76,000
Yühang	—	6,031	229,770	192,710	—	—	—	—	229,770	198,741
Linan	1,595	2,000	—	—	—	—	—	—	1,595	2,000
Yüch'ien	20,000	20,000	200	200	150	150	150	150	20,500	20,500
Hsinteng	3,000	3,000	—	—	—	—	—	—	3,000	3,000
Ch'anghua	18,000	18,000	12,000	12,000	—	—	—	—	30,000	30,000
Chiahsing	64,000	64,000	308,060	308,060	—	—	—	—	372,060	372,060
Haiyen	72,846	72,846	10,368	10,368	82	82	317	317	83,613	83,613
Ts'ungteh	116,200	116,200	218,600	218,600	—	—	—	—	334,800	334,800
P'inghu	80,640	94,080	—	—	—	—	—	—	80,640	94,080
T'unghsiang	50,000	50,000	140,000	1,500,000	—	—	2,400	2,250	192,400	1,552,250
Wuhsing	47,240	—	190,776	—	11,750	—	828	—	250,594	—
Ch'anghsing	1,960	2,560	32,000	32,000	—	—	—	—	33,960	34,560
Tehts'ing	8,000	8,000	96,000	96,000	1,400	1,600	975	975	106,375	106,375
Wuk'ang	14,502	18,127	20,766	25,957	917	917	—	—	36,185	45,001
Anchi	1,560	1,560	1,440	1,440	—	—	—	—	3,000	3,000

	Soya Beans		Broad Beans		Small Green Beans		Small Red Beans		Total Output	
	Normal	1932	Normal	1932	Normal	1932	Normal	1932	Normal	1932
Hsiaofeng	312	312	450	495	32	20	—	—	794	827
Ninghsien	1,920	1,920	288,000	288,000	—	—	—	—	289,920	289,920
Ts'uch'i	—	—	12,000	12,000	—	—	—	—	120,000	120,000
Fenghua	4,000	3,600	2,288	1,872	—	—	—	—	6,288	5,472
Chenhai	93,638	93,638	63,787	63,787	380,698	356,904	—	—	538,123	514,329
Tinghai	6,144	5,120	—	—	—	—	—	—	6,144	5,120
Hsiangshan	5,435	5,435	799	799	599	599	599	599	7,432	7,432
Nant'ien	—	5,000	—	171	—	90	—	—	—	5,261
Shaohsing	1,248	832	240,000	192,000	16,800	16,800	24	24	258,072	209,656
Hsiaoshan	51,200	48,000	91,220	78,390	192	192	—	—	142,612	126,582
Chuchi	289,531	330,893	—	640	—	640	—	480	289,531	332,653
Yüyao	32,000	34,000	72,000	72,000	640	640	—	—	104,640	106,640
Shangyü	3,600	3,600	2,100	2,100	—	—	—	—	5,700	5,700
Ch'enghsien	26,290	26,290	—	—	—	—	—	—	26,290	26,290
Hsinch'ang	20,000	20,000	10,320	10,320	940	940	—	—	31,260	31,260
Linhai	—	—	114,280	114,280	—	—	—	—	114,280	114,280
Huangyen	14,400	14,400	12,320	12,320	1,600	1,600	720	720	29,040	29,040
Ninghai	300	300	4,800	4,800	—	—	—	—	5,100	5,100
Wenling	4,560	4,560	2,400	2,400	240	240	—	—	7,200	7,100
T'ient'ai	30,441	30,441	18,296	18,296	—	—	—	—	48,737	48,737
Hsienchü	97,126	72,851	9,168	9,168	—	—	—	—	106,294	82,019
Chinhua	33,482	32,482	28,320	28,320	1,446	1,446	—	—	63,248	63,248

	Soya Beans		Broad Beans		Small Green Beans		Small Red Beans		Total Output	
	Normal	1932	Normal	1932	Normal	1932	Normal	1932	Normal	1932
Lanch'i	83,570	83,570	9,600	9,600	3,803	3,803	—	—	96,973	96,973
Tungyang	3,450	3,450	—	—	—	—	—	—	3,450	3,450
Iwu	960	960	1,600	1,600	1,000	1,000	500	500	4,060	4,060
Yungk'ang	1,820	1,560	—	—	60	60	15	12	1,895	1,632
Wui	32,414	27,783	8,329	8,529	411	548	—	—	41,154	36,660
P'ukiang	67,500	67,500	—	—	—	—	—	—	67,500	67,500
T'angch'i	18,099	16,968	292	321	778	778	10	8	19,179	18,075
Ch'ühsien	22,025	22,025	18,110	18,110	200	200	200	200	40,535	40,535
Lungyu	32,000	32,000	—	—	—	—	—	—	32,000	32,000
Kiangshan	165,141	165,141	—	—	—	—	—	—	165,141	165,141
Ch'angshan	9,944	9,944	9,107	11,384	2,278	1,709	179	179	21,508	23,216
K'aihua	73,210	97,613	1,316	15,792	39,480	39,480	723	723	114,729	153,608
Chienteh	30,000	19,200	30,000	96,000	160	160	—	—	60,160	115,360
Shunan	40,000	40,000	5,000	5,000	—	—	—	—	45,000	45,000
T'unglu	5,600	5,600	2,880	2,880	—	—	—	—	8,480	8,480
Shuian	25,600	25,600	—	—	—	—	—	—	25,600	25,600
Shouch'ang	192,000	192,000	7,200	7,200	—	—	—	—	199,200	199,200
Fenshui	400	400	500	500	288	288	—	—	1,188	1,188
Yungchia	17,364	10,853	15,082	12,065	—	—	—	—	32,446	22,918
Juian	25,000	25,000	2,000	2,000	—	—	—	—	27,000	27,000
Lots'ing	—	—	—	—	—	—	—	—	—	—
P'ingyang	—	—	256,000	256,000	48,600	48,600	—	—	304,600	304,600

	Soya Beans		Broad Beans		Small Green Beans		Small Red Beans		Total Output	
	Normal	1932	Normal	1932	Normal	1932	Normal	1932	Normal	1932
T'aishun	6,940	6,940	—	—	—	—	—	—	6,940	6,940
Yühuan	550	495	600	540	140	140	25	25	1,315	1,200
Lishui	120,000	100,000	1,950	1,820	1,000	1,000	—	—	122,950	102,820
Ts'ingt'ien	8,960	8,960	6,400	6,400	—	—	—	—	15,360	15,360
Chinyun	9,000	9,000	5,000	5,000	—	—	—	—	14,000	14,000
Sungyang	14,400	16,000	—	—	—	—	—	—	14,400	16,000
Shuich'ang	7,200	7,650	—	—	75	75	90	98	7,365	7,823
Lungch'uan	47	—	11	—	56	—	3	—	117	—
Chingyuan	—	—	—	—	—	—	—	—	—	—
Yunho	500	720	—	—	800	800	80	640	1,380	2,160
Hsuanp'ing	270	270	200	200	50	50	—	—	520	520
Chingning	36,740	36,740	—	—	—	—	—	—	36,740	36,740
Total	2,462,274	2,499,020	3,117,705	4,274,234	517,665	482,551	38,238	38,300	6,135,882	7,294,105

MARKETING

Sales are usually made through brokers, usually attached to cereal and flour *hongs*, to whom farmers dispose of their products. In bean transactions the unit of measurement is the *tou* (斗), which is a measure of capacity of various sizes, but should be equivalent to about 10-1/3 litres.

Only 21 districts produce enough soya beans to have any surplus, which shipments have Shanghai as their final destination, and Lanch'i, Yungchia, and Ninghsien as forwarding centres. The other varieties of beans are very seldom sent to outside markets, as shown in the following table:

DISTRIBUTION OF CHEKIANG BEAN PRODUCTS.

	Soya Beans			Broad Beans			Small Green Beans			Small Red Beans		
	Local Consumption (%)	Shipments to other Ports (%)	Principal Markets	Local Consumption (%)	Shipments to other Ports (%)	Principal Markets	Local Consumption (%)	Shipments to other Ports (%)	Principal Markets	Local Consumption (%)	Shipments to other Ports (%)	Principal Markets
Hangchow Municipality	100	—	——	100	—	——	—	—	——	—	—	
Hanghsien	100	—	——	100	—	——	100	—	——	100	—	
Haining	100	—	——	100	—	——	—	—	——	—	—	
Fuyang	100	—	——	100	—	——	—	—	——	100	—	
Yühang	100	—	——	50	50	Hangchow	—	—	——	—	—	
Linan	100	—	——	—	—	——	—	—	——	—	—	
Yüchien	100	—	——	100	—	——	100	—	——	100	—	
Hsinteng	75	25	Tunglu & Fuyang	—	—	——	—	—	——	—	—	
Ch'anghua	100	—	——	100	—	——	—	—	——	—	—	
Chiahsing	40	60	Hangchow	45	55	Hangchow	—	—	——	—	—	
Haiyen	25	75	Shanghai	100	—	——	100	—	——	100	—	
Ts'ungteh	100	—	——	100	—	——	—	—	——	—	—	
P'inghu	40	60	S'hai & H'chow	—	—	——	—	—	——	—	—	
T'unghsiang	100	—	——	100	—	——	—	—	——	100	—	
Wuhsing	100	—	——	100	—	——	100	—	——	100	—	
Ch'anghsing	100	—	——	100	—	——	—	—	——	—	—	
Lots'ing	100	—	——	100	—	——	100	—	——	100	—	
Wuk'ang	100		——	100	—	——	100	—	——	—	—	
Anchi	100	—	——	100	—	——	—	—	——	—	—	
Hsiaofeng	100	—	——	100	—	——	100	—	——	—	—	
N'inghsien	100	—	——	100	—	——	—	—	——	—	—	
Ts'uch'i	—	—	——	100	—	——	—	—	——	—	—	
Fenghua	100	—	——	100	—	——	—	—	——	—	—	
Chenhai	60	40	Shanghai	60	40	Ninghsien	65	35	Ninghsien	—	—	
Tinghai	100	—	——	—	—	——	—	—	——	—	—	

	Soya Beans			Broad Beans			Small Green Beans			Small Red Beans		
	Local Consumption (%)	Shipments to other Ports (%)	Principal Markets	Local Consumption (%)	Shipments to other Ports (%)	Principal Markets	Local Consumption (%)	Shipments to other Ports (%)	Principal Markets	Local Consumption (%)	Shipments to other Ports (%)	Principal Markets
Hsiangshan	100	—	——	100	—	——	100	—	——	100	—	
Nant'ien	100	—	——	100	—	——	100	—	——	—	—	
Shaohsing	100	—	——	100	—	——	100	—	——	100	—	
Hsiaoshan	100	—	——	50	50	Lanch'i	100	—	——	—	—	
Chuchi	100	—	——	100	—	——	100	—	——	100	—	
Yüyao	55	45	Ninghsien	80	20	Ninghsien	100	—	——	—	—	
Shangyü	100	—	——	100	—	——	—	—	——	—	—	
Chenghsien	100	—	——	100	—	——	100	—	——	—	—	
Hsinch'an	100	—	——	100	—	——	100	—	——	—	—	
Linhai	—	—	——	100	—	——	—	—	——	—	—	
Huangyen	100	—	——	100	—	——	100	—	——	—	—	
Ninghai	100	—	——	100	—	——	—	—	——	100	—	
Wenling	45	55	S'hai & Ninghsien	100	—	——	100	—	——	—	—	
T'ient'ai	100	—	——	100	—	——	—	—	——	—	—	
Hsienchü	80	20	Shanghai	100	—	——	—	—	——	—	—	
Chinhua	50	50	Shaohsing	100	—	——	100	—	——	—	—	
Lanchi	100	—	——	100	—	——	100	—	——	—	—	
T'ungyang	100	—	——	—	—	——	—	—	——	—	—	
Iwu	100	—	——	100	—	——	100	—	——	100	—	
Yungk'ang	100	—	——	—	—	——	100	—	——	100	—	
Wui	65	35	——	—	—	——	100	—	——	—	—	
P'ukiang	100	—	Chinhua	100	—	——	—	—	——	—	—	
T'angch'i	90	10	Lanch'i	100	—	——	100	—	——	100	—	
Chühsien	40	60	Lanch'i	20	80	Lanch'i	70	30	Lanch'i	50	50	Lanchi
Lungyu	60	40	Lanch'i	—	—	——	—	—	——	—	—	
Kiangshan	100	—	——	—	—	——	—	—	——	—	—	
Ch'angshan	100	—	——	100	—	——	100	—	——	100	—	
K'aihua	75	25	Lanch'i & H'chow	100	—	——	100	—	——	100	—	

	Soya Beans			Broad Beans			Small Green Beans			Small Red Beans		
	Local Consumption (%)	Shipments other Ports (%)	Principal Markets	Local Consumption (%)	Shipments to other Ports (%)	Principal Markets	Local Consumption (%)	Shipments to other Ports (%)	Principal Markets	Local Consumption (%)	Shipments to other Ports (%)	Principal Market
Chienteh	100	—	——	100	—	——	100	—	——	—	—	
Shunan	50	50	Fuyang, H'chow & Shaohsing	80	20	Lanch'i	—	—	——	—	—	
T'unglu	50	50	H'chow & Shaohsing	50	50	H'chow & Shaohsing	—	—	——	—	—	
Shuian	50	50	T'unglu, Hsinteng, Huichow & Lishui	—	—	——	—	—	——	—	—	
Shouch'ang	80	20	Linpu	100	—	——	—	—	——	—	—	
Fenshui	100	—	——	100	—	——	100	—	——	—	—	
Yungchia	80	20	Lots'ing	45	55	Shanghai	—	—	——	—	—	
Juian	60	40	Shanghai	100	—	——	—	—	——	—	—	
Lots'ing	—	—	——	—	—	——	—	—	——	—	—	
P'ingyang	—	—	——	65	35	S'hai & Fukien	65	35	S'hai & Fukien	—	—	
T'aishun	—	—	——	—	—	——	—	—	——	—	—	
Yühuan	100	—	——	100	—	——	100	—	——	100	—	
Lishui	70	30	Yungchia & Lungyu	100	—	——	100	—	——	—	—	
Ts'ingt'ien	100	—	——	100	—	——	—	—	——	—	—	
Chinyun	85	15	Lishui & Yungchia	100	—	——	—	—	——	—	—	
Sungyang	100	—	——	—	—	——	100	—	——	—	—	
Shuichang	100	—	——	—	—	——	100	—	——	100	—	
Lungch'uan	100	—	——	100	—	——	100	—	——	100	—	
Yunho	100	—	——	—	—	——	100	—	——	100	—	
Hsuanp'ing	100	—	——	100	—	——	100	—	——	—	—	

CHAPTER V

COTTON

AMONG the many important local products of Chekiang enjoying good markets throughout China are silk, tea and cotton. Chekiang, in fact, may be divided into three zones in regard to production of these commodities. Thus, western Chekiang may be called the "silk zone," eastern Chekiang the "tea zone," while the coastal districts, having a large expanse of sandy soil, is specially adapted to the cultivation of cotton, and may be regarded as the "cotton belt."

The most important cotton-growing districts in the province are Tinghai, Chenhai, Ninghsien, Ts'uch'i Yüyao, Shangyü, Shaohsing, Hsiaoshan, Hanghsien, Haining, Haiyen, P'inghu, Fuyang, and Hsinteng. Along the southern coast, in the districts of Hsiangshan, Nantien, Linhai, Ninghai, Huangyen, Yühuan, Yungchia, Juian, Lots'ing and Wenling, large crops are said to have grown formerly, but their standing as a cotton area has been lost, since most of the fields are now used for paddy, as rice nowadays fetches much better prices than cotton. A large area of former cotton fields is now neglected in consequence of the breaking of the sea-wall and bandit activities, which forced farmers to abandon cultivation. According to recent investigation the districts in the province now devoted to cotton cultivation do not exceed 20, with a total area of 1,900,000 *mou*, yielding about 500,000 piculs of ginned cotton.

In view of its favourable location as the terminus of the Shanghai-Hangchow-Ningpo Railway and at the mouth of the Yung River (甬 江), Ningpo is an important cotton center, where more than 20 firms are established, each handling from $500,000 to $1,500,000 worth of fibre a year, though even the largest dealer does not have a working capital of over $40,000.

COTTON SHIPMENTS TO NINGPO, 1930-1932

From	1930 (Piculs)	1931 (Piculs)	1932 (Piculs)
Yüyao	154,032.00	123,018.00	152,793.60
T'such'i & Chenhai	29,940.00	30,192.60	30,931.80
Shaohsing and Shangyü	9,745.80	10,398.00	8,748.00
Kiukiang and Hankow	—	9,415.80	—
Total	193,717.80	173,024.40	192,473.40

COTTON SHIPMENTS FROM NINGPO, 1930-1932

To	1930 (Piculs)	1931 (Piculs)	1932 (Piculs)
Shanghai	145,972.20	143,381.40	366.30
Hongkong	625.20	11,285.20	591.00
Yungchia	5,734.30	6,700.20	5,670.00
Taishan (岱山)	104.40	39.00	—
Choushan (舟山)	63.60	3.00	11,660.00
Shihpu (石浦)	58.40	18.00	46.00
Shenchiamen (沈家門)	24.60	5.40	—
Foochow	5,461.80	6,269.40	2,056.80
Amoy	1,255.20	3,192.00	1,947.00
Formosa	1,112.40	642.00	—
Tinghai	58.20	174.00	176.60
Yungning	.60	—	—
Likang (澧港)	23.40	4.20	—
Chüshan	87.00	26.40	—
Haimen	200.40	162.00	1,603.40
Huangyen	974.40	6.00	153.00
Kaot'ing	60.00	10.80	—
Hsiangshan	4.20	—	—
Taichow	140.70	155.40	2,033.90
Kuangtung	—	246.00	360.00
Chinkiang	—	24.00	—
Kiangsi	—	60.00	—
Japan	—	24.00	—
Chuanchow	—	—	42.00
Hsinghua	—	—	525.60
Total	161,941.60	162,271.80	150,232.40

Yüyao and Shaohsing cotton at one time were very well-known varieties. Yüyao cotton includes the product of districts east of the Tsaoê River, including Ts'uch'i, Shangyü, and Yüyao, while Shaohsing cotton is that grown west of the River in Shaohsing and Hsiaoshan.

The original popularity of Yüyao cotton was mainly due to the exceedingly large supply, good colour, and qualities specially adapted to the making of quilts. A large demand came also from spinners, but with the rapid development of the spinning industry the manufacture of coarse yarn soon gave way to fine yarn. It was only natural, therefore, that Yüyao cotton, which has a very short staple, was gradually discarded, and increased shipments to China of American cotton, which is generally much better and comparatively cheaper than the local variety, had a further adverse effect upon the domestic crop.

VARIETIES

Chekiang cotton is known by 40 or 50 different names, but mainly is of three varieties *ta pu* (大 蒲) or *ta pao* (大 苞) "large tree" (大 蒲); *Hsiao pu* (小 樹) "small tree" (小 樹); and *Nanyang* (南 陽) or *Nanhsiang* (南翔). The first is most extensively cultivated, but is the poorest of the three in quality, having an exceedingly short staple and low tenacity, good only for 8-count yarn. The "small tree" is a variation of the "large tree," though of better quality, while *Nanyang* cotton is superior to both other varieties, and is used to manufacture 12-count coarse yarn.

Nanyang cotton was formerly extensively cultivated in the districts of Shaohsing and Hsiaoshan, but now only traces can be found. This variety was largely grown in Yüyao twenty years ago, but its popularity was gradually lost, due to the fact that it has so soft a fiber that humidification is difficult. To meet the demands of dealers farmers nowadays prefer to grow "large tree," which has generally a high water content. Nevertheless, this change in the selection of variety, coupled with unscientific methods of cultivation, has greatly depreciated the quality of cotton.

VARIETIES OF COTTON GROWN IN CHEKIANG

District	Variety	Staple Length (inches)	Percentage of Lint	Remarks
P'inghu	"White seed"	7	36-37	
Haining	*Nanyang*	6	34-35	
Shaohsing	"Large tree" & *Nanyang*	6	33-34	
Hsiaoshan	"	6	32-35	
Yüyao	"Large tree"	5	29-33	
Ts'uch'i	"Large tree" & *Nanyang*	5-6	33	
Shangyu	"Large tree"	5	34	
Chenhai	"Large tree" & "green seed"	5-6	32-35	(*a*)
Ninghsien	"Large tree," *Nanyang* & "American seed"	5	33	(*b*)

(*a*) "Green seed" cotton is cultivated only at Lungshanchen (龍山鎮), and is superior to the "large tree."

(*b*) Cotton area in this city is small and the output, inferior, as "large tree" is mainly cultivated.

COTTON AREA

Cotton-fields in Chekiang cover the large area of 1,690,000 *mou*, according to the 1930 estimate of the Statistical Department, Legislative Yuan, which figure, however, is smaller than that reached by the China Cotton Statistics Association, which puts the total cotton area in Chekiang at 1,851,620 *mou* in 1930, 1,984,187 *mou* in 1931, and 1,67-,775 *mou* in 1932. Of a total of 37,099,800 *mou* under cotton in all parts of China in 1932, the Chekiang area represented 4.51 per cent, the largest among all the provinces with the exception of Kiangsu.

Yüyao, with about 700,000 *mou* of fields, is the largest cotton-growing district in the province, followed by Hsiaoshan, with 250,000 *mou*, Pinghu and Ts'uch'i, each 200,000 *mou*, and Hanghsien and Shaohsing, 100,000 *mou*. The following figures, compiled from estimates made by the Chinese Motton Mill Owners' Association, the China Cotton Statistics Association, and the Chekiang Provincial Cotton Experimental Station, show details:

COTTON AREA *(MOU)* IN CHEKIANG, 1920-1932

	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932
Yüyao	444,000	400,000	300,000	400,000	—	—	750,000	750,000	750,000	780,000	700,210	714,580	695,925
Ts'uch'i	94,100	90,000	40,000	40,000	—	—	210,000	312,500	213,400	214,900	170,000	166,000	217,700
Chenhai	12,600	16,000	30,000	10,000	—	—	40,000	40,000	40,000	50,000	60,460	90,800	60,400
Ninghsien	600	—	—	1,000	—	—	5,000	5,000	5,000	5,300	5,300	5,000	5,000
Shangyü	42,000	50,000	50,000	50,000	—	—	140,000	140,000	140,000	72,720	72,500	71,000	79,000
Shaohsing	216,000	200,000	200,000	200,000	—	—	160,000	160,000	160,000	110,200	106,400	103,600	98,200
Hsiaoshan	273,700	270,000	280,000	260,000	—	—	250,000	249,800	247,800	285,290	285,751	258,000	250,000
P'inghu	143,700	132,000	160,000	140,000	—	—	123,000	122,000	120,000	99,307	181,250	190,000	167,200
Haining	43,400	41,000	36,000	80,000	—	—	32,000	32,000	31,000	31,000	25,000	17,000	5,800
Haiyen	—	—	—	—	—	—	2,900	2,900	3,000	3,000	3,500	3,000	2,430
Hanghsien	—	—	—	—	—	—	18,000	20,000	20,600	25,000	16,000	126,472	60,600
Tinghai	—	—	—	—	—	—	—	—	—	12,300	17,630	6,840	7,120
Fuyang	—	—	—	—	—	—	—	—	—	500	300	—	—
Hsinteng	—	—	—	—	—	—	—	—	—	800	885	—	—
Hsiangshan	—	—	—	—	—	—	—	—	—	9,200	4,684	24,000	8,750
Nant'ien	—	—	—	—	—	—	—	—	—	5,000	1,920	450	—
Linhai	—	—	—	—	—	—	—	—	—	14,000	12,140	75,000	—
Ninghai	—	—	—	—	—	—	—	—	—	23,000	4,890	90,000	9,000
Huangyen	—	—	—	—	—	—	—	—	—	1,200	5,150	7,260	—
Yühuan	—	—	—	—	—	—	—	—	—	—	7,000	6,180	4,250

	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932
Yungchia	——	——	——	——	——	——	——	——	——	——	13,700	10,540	——
Juian	——	——	——	——	——	——	——	——	——	——	12,950	8,750	——
Lots'ing	——	——	——	——	——	——	——	——	——	——	——	1,315	——
Wenling	——	——	——	——	——	——	——	——	——	——	——	8,400	——
Total	1,270,101	1,199,000	1,095,000	1,181,000	1,867,200	1,772,920	1,731,000	1,734,200	1,730,800	1,843,517	1,851,620	1,984,187	1 671,375

OUTPUT

The fact that cotton grows best in a dry climate explains why the northern provinces are more suitable for cotton cultivation than Chekiang. While the lint obtainable per *mou* in Hopei, Shantung, Shansi, and Shensi averages respectively 31, 26.50, 25.90 and 25.20 catties, the yield in Chekiang amounts to only 23.40 catties.

ANNUAL SEED COTTON OUTPUT IN CHEKIANG DISTRICTS, 1920-1932

(Catties per mou)

Districts	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932
Yüyao	60	60	35	80	—	—	65	95	60	80	78	70	75
Ts'ch'i	43	60	20	80	—	—	20	80	52	70	61	63	50
Chennai	45	50	20	80	—	—	50	90	60	70–80	65–88	53–100	40–50
Ninghsien	40	—	—	80	—	—	80	130	50	60	58	46	50
Shangyü	70	100	20	90	—	—	80	95	65	90	38	50	100

Districts	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932
Shaohsing	70	80	30	80	—	—	35	90	80	80	70	60	90
Hsiaoshan	70	100	30	90	—	—	20	52	35	70	60	55	100
P'inghu	35	70	30	50	—	—	67	59	28	30	124	60	40
Haining	45	60	30	50	—	—	50	56	32	50	50	35	50
Haiyen	—	—	—	—	—	—	40	40	35	25	40	45	45
Hanghsien	—	—	—	—	—	—	50	45	24	35	40	30	50
Tinghai	—	—	—	—	—	—	—	—	—	50-60	60	13-20	30-35
Fuyang	—	—	—	—	—	—	—	—	—	15	30	—	—
Hsinteng	—	—	—	—	—	—	—	—	—	31	25	—	—
Hsiangshan	—	—	—	—	—	—	—	—	—	—	66	60	60
Nant'ien	—	—	—	—	—	—	—	—	—	—	30	50	—
Linhai	—	—	—	—	—	—	—	—	—	—	13	60	—
Ninghai	—	—	—	—	—	—	—	—	—	—	49	50	48
Huangyen	—	—	—	—	—	—	—	—	—	—	48	18	—
Yühuan	—	—	—	—	—	—	—	—	—	—	30	20	45
Yungchia	—	—	—	—	—	—	—	—	—	—	20	20	—
Juian	—	—	—	—	—	—	—	—	—	—	20	18	—
Lots'ing	—	—	—	—	—	—	—	—	—	—	—	25	—
Wenling	—	—	—	—	—	—	—	—	—	—	—	15	—
Average	45.33	60.00	24.38	75.56	—	—	50.64	75.64	47.36	55.38	52.74	45.00	56.30

The output of seed cotton is by no means proportionate to that of ginned cotton or lint, as different varieties of cotton yield different quantities after the seeds have been removed. Thus, from a picul of "large tree" cotton from 29 to 34 catties of lint may be obtained, while an equal weight of the *Nanyang* variety yields from 34 to 35 catties.

There is no definite indication of an increase in the production of lint in the Province, though the table below seems to suggest an upward trend. The small figures recorded during the earlier years are explained by the incompleteness of statistics rather than actual low production—especially in 1924 and 1925, when the crops were quite good.

ANNUAL LINT OUTPUT (CATTIES) 1920-1932*

Districts	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932
Yüyao	74,690	80,000	23,000	126,000	—	—	182,000	267,000	168,000	224,640	196,508	180,074	172,241
Ts'uchi	15,610	18,000	2,70	10,000	—	—	15,757	63,750	39,665	41,382	36,295	36,603	38,098
Chenhai	1,860	2,640	1,700	2,700	—	—	7,500	13,500	9,000	49,782	17,650	2,643	8,490
Ninghsien	100	—	—	260	—	—	1,400	2,400	900	1,100	1,076	736	880
Shangyü	9,820	20,000	3,300	16,000	—	—	42,000	49,000	34,000	25,910	10,469	13,490	30,172
Shaohsing	55,460	57,600	20,000	57,000	—	—	21,000	54,000	48,000	26,236	27,559	2,331	32,701

*Compiled from figures given by the Chinese Cotton Mill Owners' Association and the China Cotton Statistics Association.

Districts	1920	1921	1922	1923	1924	2925	1926	1927	1928	1929	1930	1931	1932
Hsiaoshan	69,716	89,100	280,000	80,000	—	—	16,100	42,500	28,500	69,896	63,437	53,213	92,500
P'inghu	17,250	32,760	16,000	20,006	—	—	30,940	26,800	12,500	10,000	83,250	42,180	24,746
Haining	6,600	8,660	3,600	18,000	—	—	6,000	6,600	3,700	5,000	4,250	2,261	1,180
Haiyen	—	—	—	—	—	—	430	430	380	120	500	490	372
Hanghsien	—	—	—	—	—	—	3,400	3,200	1,800	24,150	22,080	14,417	11,363
Tinghai	—	—	—	—	—	—	—	—	—	1,800	3,595	535	747
Fuyang	—	—	—	—	—	—	—	—	—	25	30	—	—
Hsinteng	—	—	—	—	—	—	—	—	—	40	75	—	—
Hsiangshan	—	—	—	—	—	—	—	—	—	589	989	432	1,680
Nant'ien	—	—	—	—	—	—	—	—	—	100	167	68	—
Linhai	—	—	—	—	—	—	—	—	—	524	537	1,350	—
Ninghai	—	—	—	—	—	—	—	—	—	1,450	839	1,350	1,382
Huangyen	—	—	—	—	—	—	—	—	—	670	925	392	—
Yühuan	—	—	—	—	—	—	—	—	—	—	620	370	612
Yungchia	—	—	—	—	—	—	—	—	—	—	904	632	—
Juian	—	—	—	—	—	—	—	—	—	—	932	472	—
Lots'ing	—	—	—	—	—	—	—	—	—	—	—	98	—
Wenling	—	—	—	—	—	—	—	—	—	—	—	378	—
Total	251,106	307,760	98,300	329,960	675,567	506,100	326,527	529,180	346,445	444,342	472,696	389,883	417,164

COTTON AREA AND OUTPUT IN CHEKIANG, 1930*

District	*Area (mou)*	*Output (Piculs)*
P'inghu	103,000	27,940
Haining	144,000	47,470
Wuhsing	21,000	3,340
Wuk'ang	9,000	2,690
Shaohsing	128,000	38,400
Yüyao	248,000	89,160
Tinghai	15,000	5,620
Fenghua	10,000	4,380
Nant'ien	3,000	990
Linhai	33,000	13,000
Wenling	14,000	3,740
Juian	9,000	1,980
Yungchia	9,000	2,100
Hsinch'ang	13,000	3,070
Fuyang	6,000	2,680
Iwu	19,000	6,650
Yungk'ang	6,000	1,570
Wui	24,000	9,270
Suich'ang	9,000	3,020
Chienteh	2,000	570
Fenshui	200	60
Haiyen	120,000	30,110
Ts'ungteh	12,000	4,220
Anchi	15,000	5,990
Hsiaoshan	219,000	65,770
Shangyü	110,000	40,750
Ts'uch'i	40,000	14,780
Hsiangshan	8,000	3,380
Chenhai	45,000	16,730
Ninghai	21,000	10,010
Huangyen	18,000	7,200
Yühkuan	1,000	490
Ts'ingt'ien	41,000	7,820
T'ient'ai	3,000	1,190
Chuchi	20,000	7,330
P'ukiang	34,000	14,400
Tungyang	25,000	7,590
Chingyun	4,000	520
Chinhua	56,000	20,750
Kiangshan	43,000	12,390
Yuch'ien	3,000	610
Suian	22,000	2,420

*This table is compiled by the Statistical Department, Legislative Yuan, the figures being slightly different from those given in preceding tables.

PLANTING

Climate has a great effect upon cotton crops, and the fact that conditions are subject to sudden change, especially in the regions along the coast, makes the prospects very uncertain until September, which is the normal time for picking cotton. The following statistics, compiled in 1931 by the Hangchow Nursery of the Chekiang Provincial Cotton Experimental Station, supplies a typical example of general climatic conditions in the province:

Date	APRIL			MAY		
	Average Temperature	Rainfall.	Wind	Average Temperature	Rainfall,	Wind
1	58	—	Medium	57	—	Medium
2	58	—	Light	64	—	Strong
3	65	—	Medium	68	—	〃
4	68	—	Strong	70	1.9	〃
5	69	—	Medium	70	4.4	〃
6	61	—	Strong	72	—	Medium
7	55	—	Medium	62	—	〃
8	56	—	Gale	62	—	〃
9	57	3.2	〃	62	—	Strong
10	60	3.7	Medium	60	—	Medium
11	52	—	Strong	55	4.0	Strong
12	53	—	Medium	63	—	Medium
13	60	—	〃	64	—	〃
14	61	—	〃	64	16.3	〃
15	68	—	〃	69	—	Strong
16	72	—	〃	65	—	Medium
17	67	—	〃	68	13.1	〃
18	59	—	〃	65	48.1	Strong
19	54	7.0	Light	61	10.0	Gale
20	60	11.2	Medium	68	2.0	Light
21	58	46.8	Light	76	36.0	Medium
22	61	—	Medium	71	—	Gale
23	57	5.0	〃	66	17.9	Medium
24	60	—	〃	66	1.5	Gale
25	59	39.6	Light	67	13.0	Medium
26	75	—	Medium	72	—	〃
27	75	1.9	〃	83	—	〃
28	67	6.8	〃	82	—	〃
29	63	5.2	〃	80	40.0	〃
30	52	19.8	〃	71	8.8	Strong
31	—	—		74	—	Medium

Date	JUNE			JULY		
	Average Temperature	Rainfall.	Wind	Average Temperature	Rainfall.	Wind
1	76	—	Medium	79	22.5	Medium
2	74	—	„	84	1.0	„
3	79	—	Gale	88	—	Gale
4	80	—	Medium	86	—	Medium
5	79	—	„	87	—	Gale
6	75	11.2	„	80	23.0	Medium
7	70	4.2	Gale	87	—	„
8	72	—	Medium	84	11.4	„
9	76	—	„	84	26.0	Gale
10	76	—	Medium	85	—	Medium
11	75	—	Gale	87	—	„
12	76	—	Strong	85	7.7	„
13	81	—	Medium	76	—	„
14	80	2.6	„	76	—	„
15	84	—	„	80	—	„
16	81	—	„	83	—	„
17	80	4.8	Gale	87	—	„
18	79	1.5	Medium	88	17.5	„
19	77	60.4	„	85	1.0	„
20	81	10.0	Gale	86	—	Gale
21	77	—	Medium	80	5.6	Medium
22	75	0.2	„	76	14.3	Light
23	79	—	„	79	—	„
24	84	—	„	84	—	Medium
25	86	11.8	„	77	11.8	Strong
26	88	—	„	75	87.5	„
27	86	—	„	80	15.3	„
28	87	—	Gale	82	8.3	Medium
29	89	—	Medium	84	—	„
30	87	—	Gale	86	—	Light
31	—	—		87	—	Medium

Date	AUGUST			SEPTEMBER		
	Average Temperature	Rainfall.	Wind	Average Temperature	Rainfall.	Wind
1	86	—	Gale	83	2.5	Gale
2	88	—	„	85	—	Medium
3	88	—	„	75	60.5	Gale
4	87	—	Medium	73	35.5	Medium
5	90	—	„	76	42.3	„
6	88	—	„	75	112.4	„
7	88	—	Gale	75	—	Light
8	80	—	Medium	82	—	„
9	84	6.9	„	83	—	„

Date	AUGUST			SEPTEMBER		
	Average Temperature	Rainfall.	Wind	Average Temperature	Rainfall.	Wind
10	85	—	Strong	84	—	Light
11	87	—	Gale	82	—	„
12	86	—	Medium	78	—	Medium
13	87	—	„	70	17.0	Light
14	88	—	Light	70	14.8	„
15	85	—	„	77	0.3	Medium
16	86	—	Medium	74	—	Light
17	85	—	„	78	—	„
18	89	—	„	78	—	„
19	89	—	Light	81	—	„
20	89	—	„	76	—	„
21	89	—	Medium	77	—	„
22	91	—	Light	74	—	Medium
23	87	3.6	„	75	10.5	„
24	85	66.0	Strong	78	12.1	Gale
25	82	—	„	82	—	Light
26	82	—	Medium	64	—	„
27	81	—	Gale	73	—	„
28	82	0.5	Medium	63	10.6	Strong
29	81	—	„	74	—	Gale
30	78	—	Light	78	—	Medium
31	80	—	Gale	—	—	——

The soil in Chekiang is particularly good for cotton cultivation, containing 70 per cent of sand and 30 per cent of clay. Being very loose it is easy to till, and water passes rapidly through the soil. The only drawback is that, being alluvial, the large salt content affects the growth of cotton plants when the soil is first used.

Clover is the leaf fertilizer used in cultivating cotton. Clover seeds are sown at the beginning of October, the crop being cut about the middle of April and left in the field until early May, when it is scattered over the ground where cotton has been sown. Straw or reeds are used for fertiliser instead of clover where the soil contains too much salt for cultivating the latter.

Other fertilizers include seed-cake, nightsoil, and chemical varieties, the quantity applied per *mou* varying with the financial condition of the cultivators. Thus, a rich farmer may spend four or five dollars per *mou* on fertilization, while a poor one spends less than one dollar. In Wenling night soil and artificial fertilizers are employed alternately, the former costing 16 cents per picul and the latter about 12 cents a catty. Three applications are all that are necessary, the first after May 21, the second about June 6, and the third when the plants begin to blossom. Night soil is used on the first and third occasions. The average quantity of fertiliser needed per *mou* per year is about eight piculs of nightsoil and five catties of artificial fertilizer.

The period of harvest varies greatly with different varieties of cotton as well as climate. Generally speaking, of cotton as well as climate. Generally speaking, however, the *Nanyang* cotton is an earlier variety than the "large tree," the former ripening in August, and the latter at the beginning of September.

MARKETING

The greater portion of the Chekiang cotton crop goes to local mills, of which there are four in the province, as follows:

	Location	No. of Spindles	Annual Consumption of Ginned Cotton (Piculs)	Yarn Output (Bales)
Sean You Zoo (三友社) & Tung I Kung (通益公)	Hangchow	20,360	22,790	9,748
Ho Feng (和豐)	Ninghsien	23,200	91,600	25,400
Tung Hui Kung (通惠公)	Hsiaoshan	14,560	24,700	7,000
TOTAL.....		58,120	139,090	42,148

Taking 400,000 piculs as the average annual output of raw cotton in the Province, there must be a surplus of at least 200,000 piculs available for shipments to supply the needs of other provinces. This estimate must be very near to the fact, for according to Customs returns, the total number of piculs shipped from Ninghsien amounted to 145,111 in 1929, about 155,910 in 1930 and 145,805 in 1931. Those figures, added to exports from other ports and miscellaneous sales, would give an annual average export of about 200,000 piculs.

Farmers dispose of their crops through the medium of cotton *chuang* (花莊) and cotton *hong* (花行), the former handling both seed and ginned cotton, while the latter deal exclusively in ginned cotton. Between growers and the cotton *chuang* are brokers, who go round the the villages to collect seed cotton for cotton *chuang*, who are their employers, though the brokers are paid on a commission rather than a salary basis. Commissions vary greatly, but the usual rate is about one or two per cent.

There is no uniformity of size and weight regarding cotton bales. In Yüyao packing is done by hand, and a bale may weigh 60, 120 or 130 catties. Cheese-cloth, old gunny sacks, and many other varieties of coarse cloth are used to cover the bales. Packing charges, including cloth, amount to about $4 per bale for the 130-catty variety, and from 50 cents to $1 for the other two sizes. The smaller bales are usually shipped to Shanghai, Ningpo, Hsiaoshan, Shaohsing and Hangchow, while those wighing 130 catties are sent to Yungchia, T'ient'ai and Fukien. The freight per bale from Yüyao to Ninghsien is about 40 cents by rail and 25 cents by boat.

Cotton from Ts'uch'i is packed in bales of 60 and 120 catties. Shaohsing seed cotton is baled in rush sacks, bound in pairs, weighing from 130 to 140 catties. Ginned cotton is packed in cheese-cloth when shipped to Shanghai and Ninghsien, and in gunny sacks for Chinhua, Lanch'i and other interior cities, the weight per bale being always 60 catties. Hsiaoshan seed cotton is baled in rush sacks. The following are recent prices of seed cotton from different districts in Chekiang and its principal markets:

PRICES AND MARKETS OF SEED COTTON FROM CHEKIANG

District	*Price per Picul*	*Principal Markets*
Yüyao	$12.50-15	Ninghsien, Shanghai, Hsiaoshan, Shaohsing, Hangchow, Yungchia, T'ient'ai and Fukien.
Ts'uch'i	13 down	Shanghai, Yungchia, T'ient'ai, and Fukien.
Ninghsien	10.50-12.50	Ninghsien
Chenhai	12-13.50; 9.80-11*	Ninghsien and Shanghai
Tinghai	11-13; 9.80-11*	Ninghsien and Shanghai.
P'inghu	14-16	Shanghai
Haiyen	14-15	P'inghu and Shanghai.
Haining	12-16	P'inghu and Shanghai.
Hanghsien	13.50-19 50	Shanghai and Hanghsien
Hsiaoshan	11.80-14.60	Hanghsien, Ninghsien, Shanghai, Haining, Chinhua & Lanch'i.
Shaohsing	11-13	Hsiaoshan, Shanghai, Ninghsien, Haining, Chinhua & Lanch'i.
Shangyü	11-13	Hanghsien, Ninghsien, Yüyao.
Hsiangshan	12	Ninghsien and Yungchia
Nant'ien	12	Huangyen, Yungchia & Ninghsien.
Linhai	12	Yungchia, Huangyen, T'ient'ai and Hsienchü.
Ninghai	12	T'ient'ai, Yungchia and Hsinchang.
Huangyen	12	Ninghsien and Linhai
Yungchia	13.50	Local
Juian	16 down	Local

*American seed.

COST OF CULTIVATION

The fact that there has been a general increase in the cost of fertilizers and labour, as well as in land tax, coupled with the falling prices of cotton, makes the position of growers very difficult. For instance, in districts listed in the following table, the maximum income from cotton fields in normal years amounts to only $42.70 per *mou*, while the minimum expenditure runs to almost $8. In districts like Yühan and Huangyen, where only $7.60 and $7.86 worth of cotton can be picked per *mou*, growers are bound to lose on their crops.

INCOME AND EXPENDITURE OF COTTON GROWERS IN CHEKIANG (PER *MOU*)*

	Yuhuan	Huangyen	Lotsing	Juian	Yungchia	Chenhai	Tinghai	Shaohsing	Haiyenhsien	Wenlin
INCOME:										
Cotton	$3.60	$3.86	$5.00	$6.30	$9.20	$7.40	$2.10	$9.40	$8.15	$4.02
Wheat*	4.00	4.00	4.00	4.00	3.50	—	—	1.40	—	4.00
Total	$7.60	$7.86	$9.00	$10.30	$12.70	$7.40	$2.10	$10.80	$8.15	$8.02
EXPENDITURE:										
Rent	3.00	4.00	4.00	4.00	5.00	2.50	1.00	7.50	3.80	4.00
Seed	0.15	0.14	0.10	0.20	0.10	0.20	0.20	0.50	0.35	0.15
Fertilizer	1.92	1.90	2.40	2.52	1.92	—	—	2.00	1.80	1.78
Labour	3.00	2.60	3.50	4.00	4.00	7.00	6.00	3.86	3.51	3.00
Depreciation of gear	0.10	0.10	0.10	0.10	0.15	0.50	0.60	0.20	0.20	0.05
Total	$8.17	$8.64	$10.10	$10.82	$11.17	$10.20	$7.80	$14.06	$9.66	$8.98

*In Chekiang wheat is cultivated in rotation with cotton.

TESTING COTTON

On account of improper practices on the part of some merchants, and ignorance of farmers regarding the proper weather and methods for picking cotton, the Chekiang staple has been considered as having an excessive water content. With a view to improving the standard quality merchants in Yüyao and Ts'uch'i took the initiative in 1921 in the organization of testing offices, but little success was achieved due to difficulty in obtaining the necessary co-operation from the Ningpo Customs authorities. Succeeding years saw the Government taking a keen interest in the work, for in 1927 the Ningpo Municipal Government formally took over the administration of the Ningpo Cotton Testing Office, which was an amalgamation of the offices in Yüyao and Ts'uch'i. In January, 1929, this organization was transferred to the provincial government, but in September, by order of the Central Government, it was put under the control of the Ministry of Industry, which made it a branch of the Shanghai Bureau of Inspection and Testing of Commercial Commodities.

When the Bureau took over this testing work, it limited the water content to 14 per cent, now reduced to 12 per cent., and adulteration of cotton with stone-powder, seeds, etc., is strictly prohibited. The work of the Bureau has greatly improved the position of Chekiang cotton on the Shanghai market. Yüyao cotton, for a time, was not accepted on the Chinese Cotton Goods Exchange, but on account of its improved quality the ban has now removed. Formerly the Chekiang staple fetched the lowest price among all Chinese supplies, but is now worth more than the Hankow, Tientsin, and Shantung coarse fibre. The enhanced reputation of cotton from Chekiang during the recent five years is also shown by resumed Japanese purchases, which were at one time suspended owing to the unsatisfactory quality of the staple.

CHAPTER VI

GROUNDNUTS

GROUNDNUTS are not extensively cultivated in Chekiang, the annual crop amounting to only about 200,000 piculs, less than one-twentieth of the production in Shantung. Chinese groundnuts are mainly of two varieties, "foreign" or *yang sheng* (洋 生) and "indigenous" or *pen sheng* (本 生). Those grown in Chekiang are generally of the latter variety, which is inferior on account of the smaller kernels and oil content.

Groundnuts in Chekiang are planted in late spring or early summer, and picked about six months later. No special fields are set apart for their cultivation, which is only a side-line of the farmers, and groundnuts are usually found growing on roadsides and in odd corners.

GROUNDNUT CULTIVATION IN CHEKIANG

	Sowing	Picking	Annual Yield Normal (catties)	1932 (catties)	Soil
Hanghsien	April	September	100	100	Sandy loam
Fuyang	May	„	80	80	——
Linan	April	August	80	80	Sandy soil
Yüch'ien	May	September	—	60	——
Hsinteng	„	October	200	200	Sandy soil
Ch'anghua	Summer	Autumn	150	150	Sandy loam
Wuhsing	March	November	160	—	Clay loam
Hsiaofeng	April	September	90	100	„ „
Hsiangshan	„	August	200	200	Loam soil
Nat'ien	March	September	—	120	Sandy soil
Shaohsing	December	October	150	150	„ „
Hsiaoshan	September	May	200	—	„ „
Chuchi	April	September	—	50	Clay loam
Shangyü	„	July	200	200	——
Ch'enghsien	„	September	200	200	Sandy soil
Hsinch'ang	„	„	200	—	„ „

Groundnut Cultivation in Chekiang (Continued)

	Sowing	Picking	Annual Yield Normal (catties)	1932 (catties)	Soil
Linhai	March	October	400	—	Sandy soil
Huangyen	April	„	60	60	Sandy loam
Ninghai	March	Sept.-Oct.	60	60	——
Wenling	May	November	80	80	Clay loam
Tient'ai	April	October	150	180	„ „
Chinhua	July	December	200	—	Sandy soil
Lanch'i	May	October	100	100	——
Tungyang	„	„	150	—	——
Iwu	April	„	200	200	Sandy soil
Yungk'ang	„	November	55	55	„ „
Wui	„	October	300	300	„ „
T'angch'i	Spring	Autumn-Winter	165	170	„ „
Chühsien	April	October	130	130	„ „
Lishui	Mar.-Apr.	Oct.-Nov.	200	200	„ „
Chinyun	April	November	100	100	„ „
Suich'ang	May	„	120	130	Clay loam
Lungch'uan	Spring	——	120	—	Sandy loam
Lungyu	April	October	200	—	Sandy soil
Kiangshan	May-June	„	450	450	Clay loam
Ch'angshan	March	„	240	300	Sandy loam
K'aihua	May-June	Oct.-Nov.	200	200	„ „
Chienteh	April-May	October	112	112	Sandy soil
Shuian	May	„	96	—	„ „
Shouch'ang	„	Sept.-Oct.	128	128	„ „
Fenshui	April-May	„ „	300	300	„ „
Yungchia	„ „	October	200	200	„ „
Juian	——	„	400	400	„ „
P'ingyang	Spring	Autumn	500	450	„ „
T'aishun	——	——	450	—	„ „
Yühuan	May	October	80	80	Sandy loam
Yunho	April	„	200	200	——
Shuanp'ing	„	November	90	90	Clay loam

According to a recent estimate the total area in Chekiang under groundnuts amounted to 130,438 *mou*, of which 32,289 *mou* is in Chühsien, 11,900 in T'ient'ai, and 9,197 in Chinhua, the remaining area being scattered over 42 other districts.

AREA UNDER GROUNDNUTS AND ANNUAL OUTPUT

	Area (*mou*)	Annual Output (piculs) Normal Year	1932
Hanghsien	100	100	100
Fuyang	2,000	1,600	1,600
Linan	2,220	6,600	6,600
Hsinteng	100	200	200
Ch'anghua	3,000	4,500	4,500
Wuhsing	240	3,840	3,840
Ch'anghsing	2,000	3,000	3,000
Hsiaofeng	1,600	1,440	1,600
Hsiangshan	50	100	100
Nant'ien	30	36	36
Shaohsing	5,000	7,500	7,500
Hsiaoshan	1,600	3,200	3,200
Chuchi	500	250	250
Shangyü	1,000	2,000	2,000
Kiangshan	40	180	180
Ch'angshan	2,530	6,072	7,590
K'aihua	830	1,660	1,660
Chienteh	1,500	1,680	1,680
Shuian	800	480	480
Shouch'ang	4,000	3,200	3,200
Fenshui	1,000	3,000	2,800
Yungchia	5,717	11,434	11,434
Juian	1,500	6,000	6,000
Hsinch'ang	3,100	6,200	6,200
Huangyen	3,000	1,800	1,800
Ninghai	200	120	120
Wenling	500	400	400
T'ient'ai	11,900	17,850	21,420
Chinhua	9,197	18,394	18,394
Lanch'i	4,000	4,000	4,000
Tungyang	3,000	4,500	4,500
Iwu	5,000	10,000	10,000
Yungk'ang	1,000	550	550
Wui	3,240	9,720	9,720
T'angch'i	505	833	858
Chühsien	32,289	41,976	41,976
Lungyu	6,000	12,000	——
P'ingyang	5,000	25,000	22,500
Yühuan	1,500	1,200	1,200
Lishui	2,000	4,000	4,000
Chinyun	1,000	1,000	1,000

Area Under Groundnuts and Annual Output *(Continue)*

	Area (*mou*)	Annual Output (piculs) Normal Year	1932
Shuichang	150	180	195
Lungchien	100	120	120
Yunho	200	400	400
Hsienping	200	180	180
TOTAL.....	131,938	228,495	218,883

Chekiang not being a large producing Province explains why groundnuts are very seldom sent out to other provinces, in fact, most districts do not produce more than is necessary for local consumption. Of the 45 districts growing groundnuts, only about ten—Hsiaofeng, Linan, Hsinch'ang, Juian, Linhai, Chinhua, Chühsien, Lungyu, K'aihua and Shouch'ang—have surplus supplies, those of the last four-named being mainly shipped to Lanch'i, while a portion of the Linan crop goes to Yühang. Yungchia, Huangyen, and Shaohsing are markets respectively for supplies from Juian, Linhai, and Chinhua. Three districts, Ch'enghsien, Ninghsien and Shaohsing, serve as an outlet for the surplus products of Hsinchang. The following table furnishes further particulars:

GROUNDNUT CONSUMPTION

District	Local Consumption (per cent)	Markets for Surplus Supplies	Local Prices (per picul)
Hanghsien	100	—	$5.00
Fuyang	100	—	8.50
Linan	90	Yuyao	8.00
Hsinteng	100	—	8.00
Ch'anghua	100	—	8.00
Wuhsing	100	—	11.00
Ch'anghsing	100	—	10.00
Hsiaofeng	90	Wuhsing, Hanghsien	5.50
Hsiangshan	100	—	5.00
Nant'ien	100	—	4.20
Shaohsing	100	—	8.00
Hsiaoshan	100	—	9.00
Chuchi	100	—	12.00

District	Local Consumption (per cent)	Markets for Surplus Supplies	Local Prices (per picul)
Shangyū	100	——	6.00
Ch'enghsien	100	——	8.00
Hsinch'ang	55	Ch'enghsien, Ninghsien, Shaohsing	8.00
Linhai	80	Huangyen	5.80
Huangyen	100	——	7.00
Ninghai	100	——	7.00
Wenling	100	——	8.00
T'ient'ai	100	——	10.00
Chinhua	80	Shaohsing	10.00
Lanch'i	100	——	8.00
Tungyang	100	——	8.00
Iwu	100	——	8.00
Yungk'ang	100	——	9.00
Wui	100	——	9.00
T'angch'i	100	——	5.00
Chūhsien	45	Lanch'i	8.00
Lungyu	40	"	8.00
Kiangshan	100	——	10.00
Ch'angshan	100	——	8.00
K'aihua	70	Lanch'i	10.00
Chienteh	100	——	10.00
Shuian	100	——	9.00
Shouch'ang	70	Lanch'i, Hanghsien	9.00
Fenshui	100	——	8.50
Yungchia	100	——	3.00
Juian	80	Yungchia	4.00
P'ingyang	100	——	5.00
T'aishun	100	——	10.00
Yühuan	100	——	5.00
Lishui	100	——	8.00
Chinyun	100	——	7.00
Shuian	100	——	10.00
Lungch'uan	100	——	3.00
Yunho	100	——	10.00
Hsuanp'ing	100	——	8.00

CHAPTER VII

MISCELLANEOUS AGRICULTURAL PRODUCTS

SWEET potatoes, rapeseed, kaoliang, maize, and sesamum are classified as miscellaneous agricultural products on account of their comparatively small importance among the crops of Chekiang.

PRODUCTION AND CONSUMPTION OF MISCELLANEOUS CROPS.

	Area (*mou*)	Annual Output (Piculs)	Total Value (Dollars)	Local Consumption (Piculs)	Shipments to other Districts (Piculs)
Sweet potatoes	1,372,502	11,441,984	17,146,291	10,773,136	668,848
Rapeseed	2,130,078	2,906,421	22,361,456	1,803,988	1,102,433
Sesamum	67,054	55,674	518,000	55,390	284
Maize	1,804,186	2,766,710	18,432,351	2,537,717	228,993
Kaoliang	111,783	118,734	361,594	118,734	——
Total	5,485,603	17,289,523	58,819,692	15,288,965	2,000,558

SWEET POTATOES

On account of the rising price of rice, sweet potatoes have become an important food for the poor. A recent estimate puts the total annual production in the Province at 11,441,984 piculs, valued at about $17,146,300.

A peculiar fact in regard to potato cultivation is the frequent disproportion between area and yield. Thus, P'ingyang and Shaohsing have both a larger number of *mou* of potato-fields than Tinghai, but their annual production is smaller. Although Chuchi has only 50,000 *mou* of Sweet potatoes, the total annual yield amounts to 1,500,000 piculs, equal to that of P'ingyang, where the area under cultivation is 300,000 *mou*.

In most districts the crop is just about enough to meet the local demand, only those places having good transportation facilities being able to ship supplies to Kiangsu.

PRODUCTION AND CONSUMPTION OF SWEET POTATOES

	Area (*mou*)	Annual Output (Piculs)	Total Value (Dollars)	Local Consumption (Piculs)	Shipments to Other Districts (Piculs)	Outside Markets
Hanghsien	24,000	255,480	198,695	250,000	5,480	——
Fuyang	60,000	240,000	240,000	240,000	——	——
Yühang	41,009	437,980	——	437,980	——	——
Yüch'ien	7,000	71,460	65,000	49,560	21,900	Northern Kiangsu
Chiashan	15,000	240,000	33,000	80,000	160,000	" "
Haiyen	4,640	46,400	371,200	16,400	30,000	Shanghai
T'unghsiang	100	1,100	660	1,100	——	——
Wuhsing	54,000	16,200	9,720	16,200	——	——
Wuk'ang	3,186	15,930	31,860	15,930	——	——
Anchi	3,000	9,000	9,000	9,000	——	——
Ts'uch'i	3,000	9,000	11,700	9,000	——	——
Fenghua	10,000	100,000	60,000	100,000	——	——
Chenhai	13,000	77,500	69,560	68,000	9,500	Ninghsien
Tinghai	95,700	1,914,000	1,148,400	1,914,000	——	——
Hsiangshan	2,754	11,016	27,540	11,016	——	——
Nant'ien	24,000	213,810	198,500	76,580	137,230	Hsiangshan
Shaohsing	139,000	695,000	486,500	695,000	——	——
Hsiaoshan	300	3,300	2,970	3,300	——	——
Chuchi	50,000	1,500,000	1,500,000	1,500,000	——	——
Shangyü	2,000	10,000	6,000	10,000	——	——
Ch'enghsien	6,000	47,950	——	47,950	——	——

PRODUCTION AND CONSUMPTION OF SWEET POTATOES *(Continued)*

	Area (*mou*)	Annual Output (Piculs)	Total Value (Dollars)	Local Consumption (Piculs)	Shipments to Other Districts (Piculs)	Outside Markets
Hsinch'ang	8,000	120,000	72,000	120,000	——	——
Huangyen	10,000	12,000	36,000	10,000	2,000	Ninghsien
Ninghai	300	300	600	300	——	——
Wenling	80,000	1,280,000	8,960,000	1,280,000	——	——
Tungyang	1,000	4,500	7,200	4,500	——	——
Iwu	29,000	114,260	104,000	84,000	30,260	Tungyang
Yungk'ang	3,500	10,500	21,000	10,500	——	——
Wui	5,400	18,900	13,230	18,900	——	——
P'ukiang	6,000	80,320	78,500	80,320	——	——
Kiangshan	48,000	660,890	580,000	542,000	118,890	Chühsien & K'aihua
Ch'angshan	1,400	56,000	56,000	56,000	——	——
K'aihua	53,850	215,400	215,400	215,400	——	——
Shunan	10,000	50,000	50,000	50,000	——	——
T'unglu	2,800	1,960	1,960	1,960	——	——
Shuian	9,000	37,730	35,000	37,730	——	——
Shouch'ang	3,000	9,000	9,000	9,000	——	——
Fenshui	600	6,000	7,200	6,000	——	——
Juian	1,000	20,000	20,000	20,000	10,000	——
Lots'ing	32,000	32,000	22,400	32,000	——	——
P'ingyang	300,000	1,500,000	1,050,000	1,500,000	——	——
T'aishun	30,000	450,000	450,000	450,000	——	——
Yühuan	71,772	287,088	574,176	143,500	143,588	——

PRODUCTION AND CONSUMPTION OF SWEET POTATOES *(Continued)*

	Area (*mou*)	Annual Output (Piculs)	Total Value (Dollars)	Local Consumption (Piculs)	Shipments to Other Districts (Piculs)	Outside Markets
Lishui	4,000	4,000	12,000	4,000	——	——
Ts'ingt'ien	21,000	102,720	56,200	102,720	——	——
Ch'ingyuan	60,000	300,000	150,000	300,000	——	——
Shuich'ang	9,000	70,880	68,000	70,880	——	——
Lungch'uan	200	400	400	400	——	——
Yunho	8,000	46,220	45,220	46,220	——	——
Chingning	6,000	35,790	34,500	35,790	——	——
Total	1,372,511	11,441,984	17,200,291	10,783,136	668,848	——

RAPESEED

Rapeseed is put to various uses. The oil is a good condiment, while in villages and small towns, people use it for lamps. Rapeseed cake, which is a by-product in extracting oil, is an excellent fertilizer, and young rape is considered a table delicacy.

P'inghu ranks first as a rapeseed producing district in the Province, followed by K'aihua and Juian. Almost in every Chekiang district there are mills which extract rapeseed oil for clients. It is estimated that of a total of 2,906,421 piculs of rapeseed oil extracted last year in the Province, 1,803,988 was for local consumption, while the remainder went mostly to Shanghai. The oil sent to Lanch'i, Ninghsien and Hangchow is mostly shipped to other ports.

RAPESEED PRODUCTION AND CONSUMPTION

	Area (*mou*)	Annual Output (Piculs)	Total Value (Dollars)	Local Consumption (Piculs)	Shipments to Other Districts (Piculs)	Outside Markets
Hanghsien	20,000	20,000	160,000	20,000	——	——
Haining	10,000	9,600	57,600	9,600	——	——
Fuyang	50,000	64,000	704,000	64,000	——	——
Ch'anghua	5,000	2,500	12,500	2,500	——	——
Chiahsing	50,000	64,000	384,000	64,000	——	——
Chiashan	157,000	175,840	1,055,040	58,613	117,227	Shanghai
Haiyen	72,848	93,245	652,715	93,245	——	——
P'inghu	350,000	672,000	6,048,000	72,000	600,000	Shanghai
T'unghsiang	10,000	5,000	40,000	5,000	——	——
Wuhsing	240	3,840	27,880	3,840	——	——
Tehts'ing	55,000	49,500	445,500	49,500	——	——
Wuk'ang	825	528	4,224	528	——	——
Hsiaofeng	2,700	1,890	9,450	1,890	——	——
Fenghua	1,800	1,800	18,000	1,800	——	——
Chenhai	10,864	10,864	108,640	8,374	2,490	——
Nant'ien	50	40	180	40	——	——
Shaohsing	90,000	187,200	1,497,600	187,200	——	——
Hsiaoshan	100,000	112,000	896,000	112,000	——	——

RAPESEED PRODUCTION AND CONSUMPTION *(Continued)*

	Area (*mou*)	Annual Output (Piculs)	Total Value (Dollars)	Local Consumption (Piculs)	Shipments to Other Districts (Piculs)	Outside Markets
Chuchi	200	200	600	200	—	—
Yüyao	50,000	10,000	170,000	—	10,000	Ninghsien
Shangyü	4,000	4,000	—	—	—	—
Hsinchang	1,800	1,800	10,800	1,800	—	—
Huangyen	7,500	10,800	64,800	10,800	—	—
Ninghai	350	70	490	50	20	—
Chinhua	26,600	31,920	223,440	15,960	15,960	Shaohsing
Lanch'i	80,000	64,000	320,000	64,000	—	—
Tungyang	1,600	984	5,412	984	—	—
Iwu	1,000	400	2,400	400	—	—
Yungk'ang	2,000	400	6,400	400	—	—
Wui	17,400	5,746	51,714	5,746	—	—
P'ukiang	1,000	1,000	5,000	1,000	—	—
T'angch'i	84,678	67,742	474,194	19,555	48,187	Lanch'i
Chühsien	63,765	57,388	573,880	31,644	25,744	„
Lungyu	15,000	12,000	60,000	12,000	—	—
Kiangshan	80,000	38,400	268,800	38,400	—	—
Changshan	42,053	13,457	67,285	13,457	—	—
K'aihua	108,624	521,395	3,649,765	347,597	173,798	—

RAPESEED PRODUCTION AND CONSUMPTION *(Continued)*.

	Area (*mou*)	Annual Output (Piculs)	Total Value (Dollars)	Local Consumption (Piculs)	Shipments to Other Districts (Piculs)	Outside Markets
Chienteh	74,000	74,000	518,000	74,000	—	—
Shunan	10,000	8,000	56,000	8,000	—	—
T'unglu	6,000	9,600	67,200	6,000	3,600	—
Shuian	7,000	5,600	44,800	5,600	—	—
Shouch'ang	8,000	5,600	50,400	5,600	—	—
Fenshui	1,261	883	4,415	883	—	—
Yungchia	15,400	12,320	86,240	8,212	4,108	—
Juian	336,000	201,600	1,411,200	100,800	100,800	—
Lots'ing	22,000	132,000	660,000	132,000	—	—
P'ingyang	30,000	96,000	480,000	96,000	—	—
Yühuan	23.500	23,500	117,500	23,500	—	—
Lishui	5,000	5,000	25,000	5,000	—	—
Ts'ingt'ien	2,000	2,560	12,800	2,560	—	—
Ch'ingyuan	3,570	2,499	19,992	2,000	499	—
Shuich'ang	6,400	7,680	92,160	7,680	—	—
Lungchuan	50	30	240	30	—	—
Yunho	1,000	4,000	28,000	4,000	—	—
Hsuanp'ing	5,000	4,000	28,000	4,000	—	—
Total	2,130,078	2,910,421	21,778,256	1,803,988	1,102,433	—

SESAMUM

Sesamum oil is an expensive condiment, but sesamum is not extensively cultivated in Chekiang. The whole area in the Province does not amount to more than 67,100 *mou*, K'aihua, with 17,860 *mou*, contributing the largest production of sesamum seed.

SESAMUM PRODUUCTION AND CONSUMPTION

	Area (*mou*)	Annual Output (Piculs)	Total Value (Dollars)	Local Consumption (Piculs)	Shipments to Other Districts (Piculs)	Outside Markets
Fuyang	2,000	800	13,600	800	—	—
Wuhsing	250	150	1,950	150	—	—
Hisaofeng	350	175	1,400	175	—	—
Hsiangshan	646	128	1,024	128	—	—
Nantien	10	5	33	5	—	—
Shaohsing	413	248	2,976	248	—	—
Chuchi	400	400	2,400	400	—	—
Huangyen	800	300	3,000	300	—	—
T'ient'ai	7,700	4,820	48,200	4,822	—	—
Chinhua	9,788	2,936	20,552	2,936	—	—
Iwu	200	60	600	60	—	—
Yungk'ang	100	20	240	20	—	—
Wui	6,322	3,161	47,415	3,161	—	—
T'angch'i	974	584	5,256	500	84	—
Chühsien	650	520	6,240	320	200	Lanch'i

SESAMUM PRODUCTION AND CONSUMPTION *(Continued)*

	Area (*mou*)	Annual Output (Piculs)	Total Value (Dollars)	Local Consumption (Piculs)	Shipments to Other Districts (Piculs)	Outside Markets
Lungyu	3,000	2,400	19,200	2,400	——	——
Ch'angshan	3,690	2,583	25,830	2,583	——	——
K'aiuha	17,860	17,860	107,160	17,860	——	——
Chienteh	1,000	200	2,400	200	——	——
Shouch'ang	2,000	1,200	14,400	1,200	——	——
Fenshui	751	601	2,404	601	——	——
P'ingyang	10,000	15,000	180,000	15,000	——	——
Yühuan	50	13	130	15	——	——
Lishui	800	640	5,120	640	——	——
Chinyun	1,000	500	1,000	500	——	——
Shuich'ang	100	70	700	70	——	——
Yunho	200	300	3,600	300	——	——
Total	71,054	55,674	516,000	55,390	284	——

MAIZE

As the rice supply in Chekiang is not sufficient for local consumption, the rural population live largely upon maize flour.

Wui has the largest area under maize, with P'ukiang and Chuchi next. In regard to output T'ungyang stands first, followed by P'ukiang and Chuchi. The maize area in the Province covers 1,804,186 *mou*, with an annual yield of 2,766,710 piculs, valued at $18,432,351.

MAIZE PRODUCTION AND CONSUMPTION

	Area (*mou*)	Annual Output (Piculs)	Total Value (Dollars)	Local Consumption (Piculs)	Shipments to Other Districts (Piculs)	Outside Markets
Hanghsien	1,000	1,400	5,600	1,400	——	——
Fuyang	3,000	3,000	12,000	3,000	——	——
Linan	2,000	4,000	20,000	20,000	——	——
Yüch'ien	5,334	60,012	300,060	25,000	35,012	Districts formerly under the prefecture of Chinhua and Yenchow.
Hsinteng	100	1,500	1,800	1,000	500	Fuyang
Ch'anghua	5,000	50,000	75,000	50,000	——	
Chiahsing	2,500	5,000	20,000	2,000	3,000	Hsiashih & Hangchow
Haiyen	180	270	1,890	270	——	——
Wuk'ang	1,250	625	1,865	625	——	——
Anchi	3,600	3,600	8,000	3,600	——	——
Hsiaofeng	5,918	11,836	23,672	11,836	——	——
Fenghua	500	500	1,000	500	——	——
Chenhai	1,804	1,804	3,608	1,804	——	——
Hsiangshan	214	237	1,185	237	——	——
Shaohsing	19,000	28,910	130,095	28,910	——	——

MAIZE PRODUCTION AND CONSUMPTION *(Continued)*

	Area (*mou*)	Annual Output (Piculs)	Total Value (Dollars)	Local Consumption (Piculs)	Shipments to Other Districts (Piculs)	Outside Markets
Chuchi	196,000	196,000	6,468,000	196,000	—	—
Shangyü	21,097	21,097	63,291	21,097	—	—
Ch'enghsien	80,000	120,000	60,000	120,000	—	—
Hsinch'ang	6,800	6,800	20,400	6,800	—	—
Linhai	1,182	17,730	52,190	17,730	—	—
Ninghai	2,000	4,000	6,400	4,000	—	—
T'ient'ai	14,390	14,390	834,620	14,390	—	—
Hsienchü	75,900	75,900	151,800	75,900	—	—
Chinhua	27,070	154,140	308,280	154,140	—	—
Lanch'i	6,200	93,000	2,976,000	93,000	—	—
Tungyang	130,000	353,600	1,131,520	353,600	—	—
Iwu	7,200	7,200	28,800	7,200	—	—
Yungk'ang	98,000	148,000	518,000	148,000	—	—
Wui	209,000	183,000	549,000	102,000	81,000	—
P'ukiang	200,000	300,000	1,200,000	200,000	100,000	—
T'angch'i	14,124	14,125	353,125	10,750	3,375	—
Chühsien	1,344	2,150	15,050	1,044	1,106	—
Lungyu	10,000	25,000	75,000	20,000	5,000	—
Kiangshan	20,000	30,000	135,000	30,000	—	—

MAIZE PRODUCTION AND CONSUMPTION *(Continued)*

	Area (*mou*)	Annual Output (Piculs)	Total Value (Dollars)	Local Consumption (Piculs)	Shipments to Other Districts (Piculs)	Outside Markets
Ch'angshan	24,620	36,930	147,720	36,930	—	—
K'aihua	12,220	12,220	48,880	12,220	—	—
Chientch	100,000	100,000	440,000	100,000	—	—
Shunan	80,000	96,000	288,000	96,000	—	—
T'unglu	1,650	3,300	9,900	3,300	—	—
Shuian	130,000	156,000	624,000	156,000	—	—
Shouch'ang	40,000	48,000	163,000	48,000	—	—
Fenshui	10,000	10,000	30,000	10,000	—	—
Yungchia	3,828	4,594	9,188	4,594	—	—
Yühuan	200	30,000	75,000	30,000	—	—
Lishui	84,560	100,000	360,000	100,000	—	—
Ts'ingt'ien	14,200	16,040	64,160	16,040	—	—
Chinyun	100,000	180,000	470,000	180,000	—	—
Shuich'ang	6,400	6,400	25,600	6,400	—	—
Yunho	2,000	5,000	16,000	5,000	—	—
Hsuangp'ing	20,000	20,000	60,000	20,000	—	—
Chingning	2,800	3,400	10,200	3,400	—	—
Total	1,804,186	2,766,710	18,432,351	2,537,717	228,993	—

KAOLIANG

Kaoliang is mainly a product of the northern provinces, the crop in Chekiang being very limited in quantity, and mainly used for wine-making and cattle feed. Yüch'ien, is considered the largest producing district, but the total area under cultivation amounts to no more than 34,000 *mou*. Kiangshan has the largest production, but the total annual yield does not exceed 27,000 piculs.

The total area in the Province devoted to kaoliang is estimated at 111,783 *mou*, yielding annually about 118,700 piculs, valued at approximately $361,600.

KAOLIANG PRODUCTION AND CONSUMPTION

	Area (*mou*)	Annual Output (Piculs)	Total Value (Dollars)	Local Consumption (Piculs)
Hanghsien ..	200	1,400	4,200	1,400
Fuyang	4,000	10,180	30,540	10,180
Yüch'ien	34,000	2,470	7,410	2,470
Ch'anghua ...	3,000	2,260	6,780	2,260
Chiahsing	3,000	4,460	12,380	4,460
Fenghua	500	500	1,500	500
Tinghai	4,000	6,070	18,210	6,070
Hsiangshan .	3,485	3,310	16,550	3,310
Shaohsing ...	2,000	1,610	6,440	1,610
Hsiaoshan ..	5,000	3,000	9,000	3,000
Hsinch'ang ...	1,200	1,200	3,600	1,200
Linhai	11,000	12,450	34,500	12,450
Huangyen ...	300	480	1,440	480
T'ient'ai	205	586	1,758	586
Chinhua	6,642	5,314	15,942	5,314
Lanch'i	16,500	16,500	49,500	16,500
Iwu	100	20	60	20
T'angch'i ...	75	150	450	150
Chühsien ...	1,406	984	5,904	984
Kiangshan ..	1,800	27,000	81,000	27,000
Ch'angshan ..	1,050	1,260	5,670	1,260
Chienteh	1,250	750	2,400	750
Shunan	3,000	6,000	15,000	6,000
T'unglu	1,200	2,400	4,800	2,400
Shuian	500	1,000	2,000	1,000
Shouch'ang ..	1,000	1,200	3,600	1,200
Fenshui	2,000	2,400	9,600	2,400
Yungchia	1,000	1,000	2,000	1,000
Yühuan	850	680	2,640	640
Lishui	520	780	2,340	780
Shuich'ang ...	700	420	1,680	420
Yunho	300	900	2,700	900
Total ...	111,783	118,734	361,594	118,734

CHAPTER VIII

SERICULTURE

OUT of the 75 districts in Chekiang no less than 58 produce silk, with a total annual output of over 1,000,000 piculs of cocoons and about 85,000 piculs of raw silk, representing one-third of China's total production. Sericulture in Chekiang dates back for thousands of years, but in the early nineteenth century students were sent to France to study foreign methods of sericulture, and schools and experimental stations were established to teach farmers modern scientific methods of breeding silkworms and cultivating mulberry trees. Subsequently institutions for studying the improvement of eggs and of reeling and marketing methods were founded. In spite of former prosperity, the silk industry in Chekiang is today in a deplorable condition, owing to the world-wide economic depression.

As the climate and soil are well suited to the cultivation of mulberry trees they are found in almost every district, but for convenience the area is generally divided into three zones, the Chientang River, the Tsao-ê valley, and the Tai Hu districts. In the Chientang valley Hsiaoshan, Chuchi, Hanghsien, T'unglu, Fuyang, Hsinteng, Fenshui, Yüch'ien, Ch'anghua, Linan, Yühang, Haining, Haiyen, P'inghu, and Ch'ungteh are the best-known mulberry areas; in the Tsao-ê valley the districts of Shaohsing, Shangyü, Chenghsien, and Hsinch'ang are most productive, and in the Taihu area the districts of Wuhsing Ch'anghsing, Chiahsing, Chiashan, Tehts'ing, Wuk'ang. T'unghsiang, Anchi, and Hsiaofeng are considered the most prosperous mulberry areas.

MULBERRY PLANTATIONS

More than 2,600,000 *mou* of land in Chekiang is devoted to the cultivation of mulberry trees, and the normal output of leaf per *mou* is about 35 piculs, but recently this has decreased to an average of less than 10

piculs and a total production of about 18,000,000 piculs. The following table gives details of the mulberry plantations in various districts:—

	Area (*mou*)	Percentage of tilled land	No. of pickings	Spring Picking (piculs per *mou*)	Summer Picking (piculs per *mou*)	Total Production (Piculs)
Chuch'i	94,000	8	1	0	—	766,000
Hsiaoshan	57,280	7	3	7	2.00	515,500
Shaohsing	9,400	0.5	2	7	2.00	84,600
Ch'enghsien	74,660	6	1	9	—	662,340
T'unglu	5,300	0.5	1	5	—	26,500
Linan	36,600	12	3	9	0.30	340,300
Chiahsing	350,450	21	3	6	1.00	2,463,150
Ch'ungteh	53,000	26	2	6	.50	318,000
Tehts'ing	76,654	37	1	6	—	459,900
Yühang	58,200	21	2	9	—	523,800
Fuyang	18,000	7	1	8	—	144,000
Fenshui	7,000	3	1	10	—	70,000
Haiyen	97,700	25	2	6	—	586,200
P'inghu	76,080	22	1	6	—	456,480
Chiashan	9,000	2	1	5	—	45,000
Hanghsien	355,596	18	3	7	1.00	2,844,800
Wuk'ang	18,309	15	1	7	—	128,163
Wuhsing	545,569	36	3	8	0.50	4,364,552
Ch'anghsing	97,000	12	1	7	—	679,000
T'unghsiang	182,945	32	1	5	—	814,725
Hsiaofeng	7,500	4	1	8	—	60,000
Hsinteng	13,250	11	1	9	—	119,200
Yütsien	9,900	9	1	7	—	69,300
Ch'anghua	3,800	2	1	8	—	30,400
Anchi	7,500	8	1	9	—	67,560
Haining	350,000	35	2	5	—	1,225,000
Hsinch'ang	28,500	5	1	8	—	228,000
Shangyü	8,400	0.5	1	7	—	58,800
Yüyao	3,400	—	1	6	—	20,400
Fenghua	3,200	—	1	5	—	16,000
Others	——	—	0	0	—	180,000
	——	—	–	–	—	——
Total	2,658,193	—	0	0	—	18,366,410

Mulberry trees in Chekiang are known either as "domestic" or "wild", the former being grafted, but the names commonly used in different districts are so varied that there are over 100 different names for quite a small number of varieties. The amount of interest taken by farmers in cultivating mulberry-trees also varies considerably in different districts. In Wuhsing, Chiahsing, Linan, Yühang, Tehts'ing, Haining, Haiyen, T'unghsiang, Ts'ungteh, Hsiaoshan Shaohsing, Chuchi, Hsinch'ang, Ch'enghsien, Wuk'ang, P'inghu, Chiashan, and Ch'anghsing plantations are found on almost all the mountains and hills, while in Fenshui, Yüch'ien, Hsinteng, Ch'anghua, Anchi, Hsiaofeng, and T'unglu only a few trees are to be seen here and there along rivers and streams.

Outside the districts of Ch'enghsien, Haining, Ts'ungteh and T'unghsiang, growers of mulberry buy their seedlings from one of these four districts. The trees are usually fertilized by human and animal manure, river mud, beancake, etc., three times a year—before sprouting, after picking, and during the winter.

Among the four seedling districts mentioned above Haining is the largest producer. In Haining from Ch'anganchen (長安鎮) west along the Shanghai-Hangchow Railway, are many villages producing large quantities of seedlings, while in Ts'ungteh, Huilihsiang (惠利鄉) and Lingnanhsiang (靈南鄉) and in T'unghsiang, Jihhuichü (日暉區) and T'ientanghsiang (天蕩鄉) are also famous for seedlings. The annual production from Haining was over 20,000,000 seedlings two years ago, but in 1932 decreased almost by 50 per cent. T'unghsiang and Ts'ungteh each produces about 5,000,000 seedlings annually. The area under mulberry in Haining is about 5,000 *mou*, and in T'unghsiang and Ts'ungteh, 3,200 *mou* each. *Huosang* (火桑) and *husang* (湖桑) are the principal kinds of mulberry grown in these districts.

The price of seedlings varies from one to 12 cents, *shuang ch'iang* (雙槍) being sold at from 4 to 12 cents a seedling, *tu t'iao* (獨條) 1.3 cent for 2 ft. shoots to 3

cents for those 5 ft. long, and *kuang ho* (廣禾) at $10 per picul. Seedlings of good quality from Haining are sold at Hangchow, Chiahsing, Huchow, and Shaohsing through local hongs or brokers, while seedlings of inferior quality from Ts'ungteh and T'unghsiang are sold to brokers from Wusih, Ihsing, and Liyang on the plantation, being then shipped to be re-sold in various markets. Sometimes large orders are received from Nanking, Chinkiang, Soochow, Shantung, and Szechuan. There are three seedling hongs doing business in Haining, the Sun I Mao (孫義茂) and Chao Tai Ch'ang (趙泰昌) at Chowwangmiao, (周王廟) and the Fu Ch'ang (復昌) at Ch'angan (長安).

Mulberry plantations in Ch'enghsien are found from the first to the ninth sections of Chungjenchü (崇仁區), but owing to decreased demand farmers are not now so interested in planting trees, and the production has decreased to 300,000 seedlings a year. The land now under mulberry seedlings is about 1,200 *mou*, with *huosang*, *husang*, and *wanghaisang* (望海桑) predominating.

In addition to Haining, T'unghsiang, Ts'ungteh, and Ch'enghsien, there are growers in Yühang and Linan who sell mulberry seedlings. During prosperous times almost 30,000 were produced annually, but that seedlings from these two districts are originally bought from Haining, being replanted and cultivated for some time before being sold.

Mulberry trees are sold through leaf hongs, who work on a commission basis, and sometimes advance credit to farmers who have no funds for the purchase of leaves, but such loans must be paid off immediately after the sale of cocoons. Owing to the depression of the silk market, cash is now almost the only form of business done. Owing to differences in the rearing season for silkworms in different localities, the dates for purchasing mulberry leaves differ almost by three weeks while the scale used for weighing is not uniform throughout the province. Below are given some particulars about mulberry tree hongs in different districts in Chekiang:

	Incorporated with.	*Trade Season.*	*Commission*	*Taels to a catty*
Hsiaoshan	Rice hong	May 8—23	12 per cent from sellers.	16
Shaohsing	Rice hong	May 8—23	12 per cent from sellers.	16
Chuchi		May 6—21	5 per cent from sellers.	16
Ch'enghsien		Mny 6, or latter part of April		16
Hsinch'ang		May 6, or latter part of April		16
Linan		May 6—21	10 per cent from sellers.	16
Yühang		First part of May	10 per cent from sellers.	16
Chiahsing	Rice, vegetable or fruit hong	May 10—25		15.3
Wuhsing	Rice, vegetable or fruit hong	May 10—25		12.8
Ts'ungteh	Rice, vegetable or fruit hong	May 10—25	10 per cent from sellers or buyers.	15.3
Tehts'ing	Rice, vegetable or fruit hong	May 10—25	5 per cent each from sellers & buyers.	15.3
Haiyen	Rice, vegetable or fruit hong	May 10—25	20 per cent each from sellers & buyers.	
P'inghu	Rice, vegetable or fruit hong	May 10—25	10 per cent each from sellers & buyers.	14
Chiashan	Rice, vegetable or fruit hong	May 10—25	10 per cent each from sellers & buyers.	14
Wuk'ang		May 10—21	10 per cent from buyers.	13 (approx)
Ch'anghsing	Rice, vegetable or fruit hong	May 10—21	10 per cent from buyers.	14
T'unghsiang	Rice, or local products hong	May 10—21	10 per cent from buyers.	15.3
Hanghsien		May 8—21	10 per cent from sellers, or from sellers & buyers.	13 (approx)
Haining	Rice, or local products hong	May 10—21	10 per cent from sellers.	15.3
Shangyü	Vegetable hong	April 21		16

At Hsiaofeng, Hsinteng, Yüch'ien, Ch'anghua, Anchi, Fenshui, T'unglu, Fenghua, and Yüyao there are very few leaf hongs, business at these places being largely done by brokers, who charge definite rates of commission.

Owing to the slump in the silk industry farmers now hesitate to plant mulberry trees. Although in some place leaves are sold at from $2 to $3 per picul, it is not uncommon that in some districts the price is less then $1, while in Fenshui and Ch'anghua mulberry leaves are used to feed cattle. The following table shows the average output from mulberry plantations, cost of production, and selling prices in various districts:—

	Spring Crop			Summer Crop			Cost of Production								
	Output (Picul)	Price (per picul) ($)	Total Price ($)	Output (Picul)	Price (per picul) ($)	Total ($)	By-products ($)	Total ($)	Land ($)	Rent ($)	Wages ($)	Fertilizer ($)	Tax implements & others ($)	Total ($)	Loss ($)
Hsiaoshan	7	2	14	2	1	3	7	26	45	(4)	18	3.5	1.5	27	1
Chuch'i	9	2	18	0	0	0	6	24	50	(5)	16	2.5	1.5	25	1
Ch'enghsien ..	9	2	18	0	0	0	5	23	50	(4)	15	3.5	1.5	24	1
T'unglu	5	1	5	0	0	0	8	13	20	(1.5)	10	2	1	14.5	1.5
Linan	9	2	18	0.3	1	0.3	2	20.3	45	(4)	12	3	1.5	20.5	0.20
Chiahsing	6	1.5	9	1	1	1	2	12	20	(1.5)	10	2.5	1.5	15.5	3.5
Ts'ungteh	6	1.5	9	0.50	1	0.5	4	13.5	30	(3)	10	2.5	1.5	17	3.5
Tehts'ing	6	2	12	0	0	0	2	14	40	(3)	10	2	1.5	16.5	2.5
Yühang	9	2	18	0	0	0	1	19	40	(4)	15	3	1.5	23.5	4.5
Fuyang	8	1.5	12	0	0	0	4	16	40	(3)	9	3	1.5	16.5	0.5
Shaohsing	7	2	14	2	1	2	4	20	45	(4)	15	3.5	1.5	24.5	4.5

	Spring Crop			Summer Crop				Cost of Production							
	Output (Piculs)	Price (per picul) ($)	Total Price ($)	Output (Piculs)	Price (per picul) ($)	Total ($)	By-products ($)	Total ($)	Land ($)	Rent ($)	Wages ($)	Fertilizer ($)	Tax implements & others ($)	Total ($)	Loss ($)
Fenshui	10	1	10	0	0	0	6	16	20	(2)	12	2	1.5	17.5	1.5
Haiyen	6	1.5	9	0.3	1	0.3	2	11.3	30	(3)	9	2	1.5	16.5	5.2
P'inghu	6	1.5	9	0	0	0	2	11	30	(3)	10	2	1.5	16.5	5.5
Chiashan	5	1.5	7.5	0	0	0	2	9.5	35	(2)	8	1.5	1.5	14	4.5
Hanghsien ...	7	2	14	1	1	1	3	18	50	(4)	12	3.5	1.5	21	3
Wuk'ang	7	2	14	0	0	0	2	16	40	(4)	10	2.5	1.5	18	2
Wuhsing	8	2	16	0.5	1	0.5	5	21.5	45	(3)	15	3.5	1.5	23	1.5
Ch'anghsing ..	7	2	14	0	0	0	3	17	40	(3)	11	3.5	1.5	19	2
T'unghsiang ..	5	2	10	0	0	0	5	15	20	(2)	10	2.5	1.5	16	1
Hsiaofeng	8	1	8	0	0	0	6	14	20	(1.5)	9	2.5	1.5	14.5	0.5
Hsinteng	9	1	9	0	0	0	2	11	30	(2)	9	3	1.5	15.5	4.5
Yüch'ien	7	1	7	0	0	0	3	10	20	(2)	9	2.5	1.5	15	5
Ch'anghua	8	1	8	0	0	0	3	11	20	(2)	8	2.5	1.5	14	3
Anchi	9	1	9	0	0	0	2	11	20	(2)	9	2.5	1.5	15	4
Haining	5	2	10	0	0	0	1	11	30	(3)	10	2.5	1.5	17	6
Hsinch'ang ...	8	2	16	0	0	0	3	19	40	(42)	16	3.5	1.5	25	6
Shangyü	7	1.5	10.5	0	0	0	3	13.5	40	(3)	14	2.5	1.5	21	6.5

SILKWORM BREEDING.

Over 800,000 families in Chekiang are engaged in rearing silkworms, and the total output of cocoons is estimated at 1,080,000 piculs a year. As a result of encouragement given by the Provincial Government, farmers in Hsiaoshan and Shaohsing now rear silkworms in summer and autumn, while in Wuhsing, Chiahsing, and Hanghsien summer worms are reared in order to make use of the new shoots on mulberry trees. The following table shows the number of families engaged in rearing, silkworms, the percentage of such families among farmers, and the output of cocoons in the various silk centres of Chekiang:—

	Families	Percentage among farmers	Cocoon Output (piculs)
Hsiaoshan	65,460	62	129,660
Chuch'i	74,000	85	54,000
Shangyü	5,450	12	3,680
Wuk'ang	9,318	45	7,120
Wuhsing	154,879	87	203,400
Ch'enghsien	53,600	75	56,950
Fenshui	3,200	34	3,900
Haiyen	40,571	81	41,800
Yühang	14,500	83	34,900
Hangchow (including the municipality)	137,000	74	189,000
P'inghu	19,968	64	25,200
Chiashan	7,000	16	3,000
Haining	74,916	89	110,000
Ts'ungteh	35,000	85	20,000
T'unghsiang	29,500	90	54,300
Hsiaofeng	7,400	41	3,800
Anchi	6,200	43	3,380
Ch'anghsing	38,000	65	45,200
Fuyang	6,400	15	9,000
Tehts'ing	36,400	86	20,000
Linan	15,590	64	24,300
T'ungiu	5,100	16	1,660
Chiahsing	74,500	74	175,200
Yüch'ien	3,400	20	3,800
Ch'anghua	2,700	15	1,700
Hsinteng	5,800	46	6,600
Hsinch'ang	15,800	32	18,200
Shaohsing	5,400	3	6,500
Yüyao	2,800	—	1,100
Fenghua	4,500	—	1,130
Others	——	—	10,000
Total	804,352	—	1,088,000

To rear one species of silkworm only is much too risky, and Chekiang farmers therefore rear several species at a time. The commonest is the Yühang species, over 50 per cent of the silkworms bred in Chiahsing, Wuhsing, Hanghsien, Hsinteng, Ch'anghua, T'unghsiang, Ch'anghsing, Anchi, Hsiaofeng, Wuk'ang Ch'ungteh, Tehts'ing, Haining, Chiashan, P'inghu, Linan and Haiyen being of this species. The Ch'eng-Hsin species (Ch'enghsien-Hsinch'ang 崍新種), although not of such good quality, is very popular in Fenghua, Shangyü, Hsiaoshan, and Shaohsing. The Taihu species (太湖種) is commonly reared in Wuhsing, Ch'anghsing, Chiahsing, Wuk'ang, and Tehts'ing, farmers in the last-mentioned place also breeding the Hsinshih species (新市種). The Fenshui species is mostly regard in its native district, with a small production in T'unglu and Hsinteng, while the Chuchi and Fuyang species are now only found within their respective districts though they were formerly more widely cultivated.

Breeding equipment generally forms part of the farmer's household furniture, though in P'inghu huts are sometimes built to serve as cocoon-houses. Very little attention is paid to sterilization, although in Ch'enghsien, Chuchi, and Shangyü chemicals are occasionally used for that purpose. To hasten hatching to the eggs a slight amount of heat is applied. For young silkworms mulberry leaves are warmed either in ovens or under cotton bedding, but for full-grown worms, unless there is some sudden change in the weather, leaves are not warmed at all.

Two different species of eggs are hatched in Chekiang, the "improved" and "native" species, the centres of the second being Yühang, Hsinch'ang Ch'enghsien, Fuyang, Fenshui, Wuhsing, and Tehts'ing. From their peculiar shape the "native" cocoons are also known as the "Feitse nut", (榧子), "dried longan", or *kui yuan* (桂圓) *yaotse* (拗子), "broad bean" or *ts'an tou* (蠶豆). etc. The first yields a fine silk, but owing to the small size of the cocoons, they are no longer accepted by the cocoon hongs. *Kui yuan* is the most popular variety, and *yaotse* being robust is easy to rear, while the other varieties are not often seen. In Fuyang *kui yuan* is the only species found, and the

output is small, while in Tehts'ing Hsinshih (新市) is the only place where silkworm eggs are cultivated. Being easy to rear the *san mien ts'an* or "three generation" silkworm (三眠蠶) is favoured among farmers in Chiahsing and Huchow. In Fenshui there are only about 100 families at Chuts'un (珠村) engaged in cultivating silkworm eggs from a species which is a cross between the Yühang and Ch'eng-Hsin, and is sold to farmers on the borders of T'unglu, Hsinteng, and Fenshui. The "improved" species was turned out in large quantities by private enterprise from 1930 to 1932, but owing to the depression in the silk trade, many of these concerns have closed down.

Villages in the second and fourth Chü (區) or sections of Ch'enghsien and Hsinch'ang are well-known silkworm egg producing places, and 10 years ago the output was over 800,000 cards, but in 1932 only about 140,000 cards were disposed of. Among the Ch'eng-Hsin species five varieties are known, the *yuantou* (圓頭) or "round-headed", *feichung* (榧種) or *feitse* shaped, *hsiaoshihwan* (小石丸), or "small pebble", Lungwangtang (龍王堂), and Yühang. The first is perhaps another name for the *kuiyuan* variety from Chuchi; the second is an off-shoot of the Taohu variety from Wuhsing; the third, a cross between the *feichung* and hsinshih, is very productive; the fourth is named after the place where the eggs were first produced, while the last variety has only recently been imported from Yühang.

Markets for the Cheng-hsin species are found at Chiahsing, Wuhsing and Hsiaoshan, and the brokers are divided into groups according to their respective native places, each group doing business among themselves. Since the establishment of the First Modern Silkworm Nursery at Hsiaoshan; the Hsiaoshan group has been growing smaller, but even there a small number of brokers continue operations, and are trying to push their way into Chiahsing and Wuhsing.

The price of silkworm eggs is collected after almost all the supply is sold, when the brokers pay first about 50 per cent of the amount due, the balance being paid off part in September and part at the end of the year. Eggs unsold one year are taken to Nanking, Soochow, Wusih,

etc. the next year for sale at a much lower price. The different kinds of egg cards are known as *laopan* (老板), *chiatsu* (夾子), *shuangkung* (雙宮) and *yüch'ien* (於潛). A *laopan* measures about 1.3 feet long and 10 inches wide, and is sold at $1. The *chiatsu* is about 1.2 feet square and is sold at 80 cents; the *shuangkung* is about 2.4 feet square and sells at $1.50, while the *yüch'ien* is very much the same as *chiatsu*, the only difference being in the quality of card used.

The following are some of the leading Ch'en-Hsin egg merchants, their business handled and markets in Chiahsing:—

		Sheets sold	Market
Ma Yün Hsiang	(馬運香)	2,000	Wuch'eng (烏程)
Ma Chin Fa	(馬金法)	1,000	" "
Lu Lao Ta	(呂老大)	700	" "
Lu Lao San	(呂老三)	1,000	" "
Chiu Yuan Tai	(裘元泰)	1,000	" "
Ting Shao Feng	(丁紹豐)	2,000	Chiahsing
Ting Chen Tai	(丁震泰)	1,000	" "
Shih I Hsiang	(施義香)	1,000	" "
Shih I Hsing	(施義興)	700	" "
Shih Pao Hsin	(施保心)	700	" "
Shih Ho Shui	(施鶴水)	1,500	" "
Chang Hsiang Kuang	(張湘光)	1,000	Wuch'eng
Wang Hsien Ti	(王仙梯)	1,000	Chiahsing
Yu Pao Tai	(俞寶泰)	2,000	Wuch'eng
Yu Fang Ting	(俞方定)	1,500	"
Chen Chien Chao	(陳綫照)	2,000	Hsincheng (新塍)
Chang Sheng Mu	(張生木)	1,000	"
Mao Sen Tai	(毛森泰)	2,000	Chiahsing
Chang Cheng Tai	(張成泰)	700	P'inghu
Chang Pao Tai	(張保太)	700	Wuhsing
Yu Ching Tai	(俞景泰)	2,000	Wuch'eng
Yu Hsi Lao	(俞喜老)	1,000	Chiahsing
Yu Chu Lao	(俞朱老)	1,000	Tanghui (塘棚)
Yu Chao Ch'an	(俞潮產)	1,000	"
Yu Pao Hsin	(俞保新)	700	Hsincheng
Yu Ching Shan	(俞景山)	500	Wuhsing
Shen Fang H'o	(沈方和)	700	Wuch'eng
Huang Chang Ken	(黃長根)	1,000	Hsincheng
Huang Tsai Ping	(黃才炳)	700	Kuangching (廣景)

		Sheets sold	Market
Ch'ien Tsu Shun	(錢祖順)	1,000	Hsincheng
Yu San H'u	(俞三和)	2,000	〃
Yu Pai Shun	(俞伯順)	1,000	〃
Yu Ting Shun	(俞鼎順)	700	〃
Yu Hsiang Chu	(俞香朱)	500	〃
Chiu Yin Hsiao	(求銀孝)	2,000	〃
Chung Chao Ching	(鍾招慶)	700	〃
Wang Yung Hsing	(王永興)	500	〃
Ying Shen Chao	(尹生招)	700	〃
Chin Hsien H'o	(金賢和)	2,000	Wuch'eng
Lee Yü Feng	(李裕豐)	3,000	〃
Lu Tso Hai	(呂作海)	1,000	Tung Shan Kou (東橋口)
Wang Wen Hsien	(王文獻)	700	〃 〃 〃
Wang Chao Chien	(王招錢)	500	Wuch'eng
Wang Chi Shih	(王濟時)	1,000	〃
Chang Teh Sheng	(張德順)	2,000	Chiahsing
Ting San H'o	(丁三和)	1,000	〃
Chao Shih Ch'un	(趙時春)	700	Wuch'eng
Tu Ting H'o	(屠定和)	1,000	〃
P'an Chu Hsing	(潘聚興)	700	〃
Tung Tse Hsien	(董子賢)	700	Yangkuangching (洋廣敬)
Shen Hsien Ch'iao	(沈仙橋)	700	〃
Li Tso Ken	(李作根)	1,000	Tung Shan Kou
Ting Pao Fu	(丁保福)	500	P'inghu
Liang Shun Tsing	(梁順清)	400	〃
Ho Fang Shui	(何方水)	700	〃
Ho Yin Nien	(何銀拈)	500	〃
Wang Chin Fu	(王金福)	1,000	Soochow

With the exception of the fifth *chü* all parts of Yühang are large producers of silkworm eggs, especially Hsienchaihsiang (仙宅鄉), Jenhohsiang (人和鄉), T'aip'inghsiang (太平鄉), Paishehsiahsiang (白社下鄉), Tungt'anghsiang (東塘鄉), Tunghanhsiahsiang (東涵下鄉) and Shengchaihsiang (盛宅鄉) in the fourth *chü*, Shangshouhsiang (上壽鄉) on the border of the third and fourth *chü*, Linyuanhsiang (靈源鄉), Chihsianghsiang (支巷鄉), Mienhantunghsiang (免涵東鄉), and the city itself. There are altogether over 8,000 families engaged in producing eggs and 1,300 merchants dealing in egg-cards. The output amounted to over 500,000 in prosperous times, but fell to about 400,000 sheets in 1932.

There are five different Yühang species, namely, *pei p'i* (白皮) *tsaop'i* (糙皮), *yülung* (玉龍), *wulung* (烏龍), and *tsaopaip'i* (糙白皮), the difference being in the size and colour of the cocoons made. To make one egg card about 2 catties of cocoons are needed, and cards sold at $2.50 a few years ago, at $2 in 1932, but last spring the price dropped abruptly to 20 cents.

Large firms sell about 4,000 cards a year, while the small concerns dispose of only a few score. The following are some of the most important merchants in Yühang:—

		Annual Sales
Wu Fu Ching	(吳福慶)	3,000
Pao Chu Yu	(鮑儲裕)	2,000
Wang Chin Po	(王錦伯)	2,000
Hung Chin Sheng	(鴻錦盛)	2,000
Tien Yung I	(田永藝)	2,000
Chen Yu Liang	(陳裕亮)	3,000
Pang Pao Shan	(龐寶山)	2,500
Chin Sheng Fu	(金生甫)	2,000
Wu Ying Heng	(吳應恒)	1,000
Wu Ching Lin	(吳景林)	3,000
Chen Ming Ho	(陳明和)	1,500
Tsai Wen Mei	(蔡文梅)	2,000

The price fixed by Wu Fu Ching is supposed to be the standard price, while others usually charge 20 or 30 cents less. Eggs laid after the Chiahsing and Huchow dealers have left Yühang are known *sung pao* (送包), the price of which fluctuates greatly; in 1932 they were offered at 30 or 40 cents a sheet, but very little business was done. With the exception of Wu Fu Ching, who sells for cash only, a deposit is paid on purchasing and the account is settled when the new cocoon market opens at Chiahsing and Wuhsing.

The silkworm egg zone in Wuhsing is found in villages along the Taihu, and as the business is a sideline of the farmers, details as to output are indefinite; that of last year was 40,000 cards, and the species is not of pure breed. Cards cost about 50 or 60 cents to produce and sell for about $1. The following are the principal merchants at Shuanglinchen (雙林鎮), the egg-card centre in Wuhsing:—

			Annual Sales
Chu Ch'un Mei	(朱春梅)	.....	3,500
Chu Shao Mei	(朱少梅)	.....	3,500
Fei Ya Ch'üun	(費雅琯)	.....	1,500
Fei Ya Ch'ün	(黃友石)	.....	3,000
Ku Fang Lin	(顧芳林)	.....	1,000
Shen Jung Fu	(沈榮富)	.....	4,000
Hsu Yu San	(徐友三)	.....	2,000
Tsai Han Ching	(蔡漢卿)	.....	2,000
Tsai Yun Chang	(彩雲章)	.....	2,000
Sheng Tai Chuang	(蛙泰莊)	.....	2,500

Eggs of the "improved" species were produced only by a sericultural school and the Provincial Silkworm Nursery before 1926. After the establishment of the third branch of the Ta Yu (大有) at Wangtienchen (王店鎮) in Wuhsing silkworm egg farm, the production of eggs by private enterprise, began, and the next year again saw the opening of the Hsi Sheng farm (希盛), but their products went solely to Wusih, Kiangsu. After 1928, responding to the demand, many new farms made their appearance, bringing the total number up to 42 in 1931. The trend of business changed in 1932, only one new farm was opened and 13 existing ones closed down. The following tables show particulars of these farms and their production in 1931 and 1932:—

PURE-BREED EGGS

	Farms	No. of moth used	No. of disqualified moth
1931 First season			
Spring Species	—	259,380	12,404
Summer „	5	13,610	——
Autumn „	—	144,472	9,408
1931 Second Season			
Spring Species	1	40,710	8,092
1931 Third Season			
Spring Species	5	123,477	43,956
Annual total	—	581,651	73,850
1932 First Season			
Spring Species	3	263,648	248,8.
Summer Species	1	860	860
Autumn Species	3	130,588	120,445
Annual total	—	395,046	370,122

COMMON SPECIES.

		Farms	Young Worms (Taels)	Cocoon (Catties)	Eggs Laid (Sheets)	Eggs Burned (Sheets)
1931						
First Season						
	Spring Species	—	—	—	105,952	—
	Summer „	75	986.67	182,126.6	13,780	2,200
	Autumn „	—	—	—	590,822	25,393
Second Season						
	Spring „	22	97.18	4,220.0	3,686	—
	Autumn „	22	97.18	4,220.0	5,644	500
Third Season						
	Spring „	57	446.65	49,941.1	182,962	7,854
Annual Total		—	1,530.50	236,287.7	902,846	36,003
1932						
First Season						
	Spring Specie	—	—	—	71,999	7,043
	Summer „	55	457.96	874,975.7	2,641	832
	Autumn „	—	—	—	265,059	7,098
Second Season						
	Spring „	3	11.23	650	3,302	—
Third Season						
	Spring „	25	121.18	166,959.5	78,389	912
Annual Total		—	590.37	104,843.52	421,390	15,885

SILKWORM EGG FARMS IN CHEKIANG.

		Location	Organization	Capital	Cocoon House Owned	Cocoon House Rented	Mulberry Plantations Owned	Mulberry Plantations Rented	Remarks
Tsui Sheng	(萃盛)	Hangchow	Partnership	$6,000	28	—	60*	—	1 branch farm
Hsi Cheng	(希成)	„	Private Ownership	5,000	3	4	14	5*	———
Hsing Kuang	(新光)	„	Limited Liability	1,000	—	24	—	26	———
Tien Cheng	(天成)	Hushu Takuan (湖墅大關)	Partnership	5,000	16	—	45	—	———
Wu Hsing	(吳興)	Huchow	Partnership	8,000	8	—	12	8	Operations Suspended in 1932
Yin Sheng	(寅生)	Hangchow	Partnership	3,000	6	—	30	—	—do—
Sheng Sheng	(生生)	„	Limited Liability	3,000	—	6	—	7	—do—
I Chang	(益昌)	„	Partnership	7,000	—	—	—	100	—do—
Yuan Yuan	(源源)	„	Partnership	4,000	—	6	—	20	—do—
Mei Chi	(梅溪)	Chuchi	Partnership	3,000	20	—	11	—	———
Chia Hsing	(嘉興)	Chiahsing	Partnership	7,000	—	12	9	12	Operations Suspended in 1932
Lin An	(臨安)	Linan	Partnership	——	10	5	60	30	1 branch farm
Cheng Pei	(城北)	Huhsu (湖墅)	Partnership	——	6	—	20	—	———
Li Min	(利民)	Haining	Partnership	——	—	13	—	25	———
Liu Pu	(柳浦)	Hangchow		——	—	6	—	—	Operations Suspended in 1932
Yang Shan	(仰山)	Haining	Partnership	——	—	7	—	—	—do—
Pu Li	(普利)	Hangchow	Partnership	——	9	—	27	—	———
Wei Hsin	(維新)	Haiyen	Private Ownership	——	10	—	12	—	———
Ts'an Yeh Kung I She		Hangchow (蠶業公益社)	Private Ownership	——	26	—	—	12	———
Hsi Hu	(西湖)	„	Partnership	——	—	—	—	—	3 branch farms

		Location	Organization	Capital	Cocoon House		Mulbery Plantations		Remarks
					Owned	Rented	Owned	Rented	
Tse Min	(澤民)	Haiyen	Partnership	——	—	—	—	—	Operations Suspended in 1932
Min Sheng	(民生)	Yühang	Partnership	——	14	—	20	30	1 branch farm
Tien Shen	(天生)	Hsinchang		——	—	—	—	38	——
Mei Yuan	(梅園)	Hsiashih (狹石)	Private Ownership	——	10	—	30	30	——
Yueh Chou	(越州)	Shaohsing	Partnership	——	10	—	—	—	Operations Suspended in 1932
Hsin Chu	(新厰)	Chiahsing	Partnership	——	4	—	30	—	——
Chou Hua	(宙華)	Chiahsing	Partnership	——	7	—	—	30	——
Pi Pu	(華浦)	Fenshui	Partnership	$6,000	—	—	—	48	——
Chen Hua	(振華)	Hsuts'un (許村)	Private Ownership	——	—	—	—	11	——
Chi Yang	(暨陽)	Chuchi	Partnership	3,000	7	20	24	20	——
Kung Li	(公利)	Hangchow	Private Ownership	——	7	6	—	15	——
Yu Chün	(裕冢)	Wuhsing	Partnership	——	22	30	27	50	——
Min Li	(民利)	Hangchow	Partnership	——	16	12	30	10	——
Ta Cheng	(大成)	Huhsu	Partnership	——	16	12	—	60	——
Ta Cheng	(大正)	Hangchow	Partnership	——	9	9	8	11	——
Yü Nung	(裕農)	Wuchen (烏鎮)		——	10	15	12	15	——
Ta Yu (大有第三蠶)		Wangtienchen (王店鎮)	Partnership	——	11	66	190	—	——
Hsin Hsing	(新興)	Chiahsing		——	7	8	15	—	——
Min Li Kung (民利公)		Kung Pu (拱埠)		——	11	—	—	—	——
Yung Li	(永利)	Hangchow	Partnership	——	6	12	7	5	2 branch farms
Tung Hsiang	(東鄉)	Shaoshan		——	19	30	—	40	——

		Location	Organization	Capital	Cocoon House		Mulbery Plantations		Remarks
					Owned	Rented	Owned	Rented	
Tien Kiang	(瀝江)	Lanch'i	Private Ownership	——	32	20	—	100	——
Ching I	(精一)	Wenchiayuen (聞家堰)	Partnership	——	10	18	—	20	——
Chien Tang	(錢塘)	Hangchow	Partnership	——	—	—	—	—	Closed down in 1932
Kuo Hua	(國華)	〃	Partnership	——	8	12	—	13	——
Hong Chow	(杭州)	〃	Partnership	——	10	7	10	13	——
Pu Li	(普利)	〃	Partnership	——	13	7	26	10	——
Wu Yün	(五雲)	〃	Private Ownership	——	3	10	—	20	——
Chin Shan	(嘉善)	Chiashan	Private Ownership	——	—	—	—	—	Closed down in 1932
Tung Hsiang	(桐鄉)	Wuchen	Private Ownership	——	—	—	—	—	—do—
Tsing Chi	(清溪)	Tehtsing		——	5	5	—	20	——
Hsing Min	(新民)	Chuchi	Private Ownership	——	6	14	—	15	——
Tsan Hua	(贊化)	Chenghsien	Partnership	——	9	12	10	—	3 branch farms
Yung Li	(永利)	Linan	Partnership	——	8	12	12	—	——
Tsui Sheng	(萃盛)	〃	Partnership	——	7	9	—	25	——
Tsui Cheng	(萃成)	〃	Partnership	——	10	15	—	30	——
Tsui Sheng	(萃盛)	Hangchow	Partnership	——	14	8	—	10	——
Hsi Hu	(西湖)	Linan	Partnership	——	46	35	—	—	——
Hsi Hu	(西湖)	Yühang	Partnership	——	25	18	—	—	——
Hang Chow	(杭州)	Hsiaoshan	Partnership	——	6	4	—	—	——
Li Chün	(利羣)	Hanghsien	Partnership	——	6	7	—	6	——
Yü Yuan	(于園)	Hanghsien	Partnership	——	6	6	—	—	——
Kai Yuan	(開元)	Wenling	Partnership	——	5	2	—	8	——
Kai Yuan	(開元)	Hangchow	Partnership	——	3	10	15	15	——

Cocoons are sold either direct to silk merchants or through cocoon hongs. Silk merchants often order cocoons in advance, providing the eggs and stating the amount of cocoons wanted while the hongs collect cocoons from farmers, dry them, and then sell to silk merchants. Before 1932 this business was largely done through cocoon hongs, but since the slump in trade and the closing down of many hongs in Haining, Shaohsing, Chiahsing, Wuhsing, Haiyen, Ch'anghua, Fuyang, T'unglu, etc. brokers now collect cocoons from the farmers while in Hsinch'ang, Anchi, Hsiaofeng, Fenshui, Shangyü, T'unghsiang, and Haiyen, public ovens were built by the local authorities where farmers can dry their cocoons.

Cocoon hongs are built either by local merchants, or by merchants from other districts and silk filatures, or by persons who rent them to others. All three forms are found in different districts in Chekiang, but in Nansha (南 沙) almost all the hongs rent their buildings the business being run by silkworm farmers.

Sometimes only the ovens and other equipments of a cocoon hong are rented, and the hong runs its own business, but sometimes cocoon hongs bny, dry, and sell cocoons on commission basis. The rent of a cocoon hong was $4,000 in prosperous times, but dropped to $500 last year, while the commission charged is about $45 per picul.

A cocoon-tax was imposed in 1883 at the rate of $4 per picul of fresh cocoons and $12 for dried, the former rate being raised to $6 after the establishment of the Republic in 1912, and again changed later to $3.60 for fresh cocoons and $11 for dry. In 1916 a new rate was imposed—$9 regular tax and $1 surtax per picul of dry cocoons and $3 per picul of fresh. In 1931, instead of the cocoon-tax a business-tax of 2 per mille was levied, while the surtax and provincial tax were no longer imposed. Brokers' licences are issued by the *hsien* government at $70 a year, no matter how big the hong is. A tax is also collected on cocoon-ovens, $7 a year for single and $14 for double ovens.

There were at one time 895 cocoon hongs in Chekiang, with 1,410 single ovens, 5,875 double ovens, and 10 mechanical ovens. The hongs operating last year were 155 in number, having 160 single ovens, 1,010 double ovens, and two mechanical ovens, and only 43,350 piculs of dry cocoon were collected.

The price of cocoons in various places in the province are usually much alike, ranging from $25 to $38 per picul for "improved" cocoons and from a little below $20 to $28 for "native" cocoons in Ch'enghsien, Hsiaoshan, Linan, and Hanghsien, through in Ch'anghua the price was as low as $11 per picul, and even then very few could be sold. The following are particulars of the cocoon hongs in various districts in Chekiang:—

	Average Cocoon Price ($ per Picul)	Hongs	Ovens	Hongs Operating in 1932	Ovens Working in 1932	Cocoon Bought (piculs)
Linan	30	9	26* 25†	2	7†	420
T'unglu	20	6	19* 14†	1	5†	120
Fuyang	20	4	16 21	—	—	——
Ch'enghsien	30	68	2 454	53	2* 375	5,800
Fenshui	22	3	10 26	1	— 10	130
Haiyen	25	57	116 302 2‡	4	12† 24 1‡	1,100
Yühang	—	11	10 60	—	—	——
Hangchow & Hanghsien	30	118	248 198 2‡	10	34 243 2‡	7,500
Hsiaofeng	22	4	16 5	1	6	110
Anchi	22	6	5 30	1	5	200
Ch'anghua	—	11	2 39	—	—	——
Hsinteng	—	6	— 39	—	—	——

(*) Single (†) Double; (‡); Mechanical.

	Average Cocoon Price ($ per picul)	Hongs	Ovens	Hongs Operating in 1932	Ovens Working	Cocoon Bought in 1932 (Piculs)
Yüch'ien	22	9	— 47	2	— 11	400
Wuhsing	28	106	223 688	1	— 10	600
P'inghu	25	26	29 247	9	1 39	1,500
Chiashan	25	17	21 127	1	— 10	200
Shangyü	27	3	— 20	1	— 7	300
Ch'anghsing	27	8	22 64	1	— 8	310
Wuk'ang	—	5	— 44	—	—	——
T'unghsiang	25	26	43 209	1	— 10	300
Ch'ungteh	25	34	55 255	6	— 47	2,100
Chiahsing	25	106	56 879 3‡	8	41 52	3,500
Shaohsing	—	23	12 127	—	—	——
Hsinch'ang	27	26	173	23	153	2,300
Haining	25	113	464 229	21	71 71	7,300
Hsiaoshan	30	39	256 3‡	4	18 3‡	4,300
Tehts'ing	—	20	30 186 1	—	—	——
Fenghua	—	1	—	—	—	——
Chuchi	28	20	5 87†	9	37†	2,500
Yüyao	—	4	12	—	—	——
Chühsien	—	1	—	—	—	——
T'such'i	—	1	—	—	—	——
Lanch'i	—	2	—	—	—	——
T'angch'i	—	5	—	—	—	——
Total	—	895	1,410 5,875	155	160 1,010 4‡	40,900

(*) Single; (†) Double; (‡) Mechanical

According to an expert's computation, in producing a picul of "improved" cocoons last year there was a loss of $16.60. The cost of production was estimated at $49.60 ($5.60 for seven egg-cards, $32 for 16 piculs of mulberry leaves, $9 for labour, and $3 for other items), while cocoons were sold at $30 a picul, with $3 for waste cocoons. The loss in reeling native silk is a little less—$7.60 on every picul of cocoons. Cocoons cost the same, and adding $8 for labour makes the total cost $57.60, while 140 taels of silk poduced therefrom are valued at $45, and waste $5 a total of $50 only. The loss in raising "native" eggs for cocoons is greater, $13.70 being lost on every picul of fresh cocoons. It requires a card of Ch'eng-Hsin eggs and 15 piculs of mulberry leaves (aggregate value $42.70) to produce one picul of fresh cocoons, but the total product is sold at $29, $26 for cocoons and $3 for waste. If "native" cocoons are reeled into silk, the loss is $5.70. The cost of producing a picul of cocoons, as mentioned above, is $42.70, and labour costs $8, making a total of $50.70, while the 128 taels of silk turned out is valued at only $40 and the waste at $5, altogether $45, thus leaving a deficit of $5.70.

It should be explained here that although from the above calculation it appears there is absolutely no profit to be made by rearing silkworms, there are still a large number of farmers engaged in this enterprise. In the first place, it is very difficult to convert plantations of mulberry tree to some other purpose, and if there is any surplus of mulberry leaves, they can be sold at $2 per picul; finally, the farmers do not count their own labour and small incidental items like firewood, charcoal, straw, etc., and think there is still enough profit in the business to warrant their continuing it. The following table shows the cost of producing a picul of fresh cocoons in various districts in Chekiang and the revenue therefrom:—

		Cost of Production						Income			
		Eggs	Mulberry	Labour	Firewood or Charcoal	Other	Total	Cocoon	Others	Total	Loss
Chuchi	"Improved" species	$4.8	$ 32.0	$11	$2	$1	$.51.6	$32	$3	$35	$76.6
	Native species	1	30.0	11			05.0	27	0	30	15.0
Hsiaoshan	"Improved" species	5.6	32.0	11	2	1	50.8	30	3	33	17.8
	Native species	1	30.0	15			45.0	25	0	28	17.0
Ch'enghsien	"Improved" species	4.8	32.0	11	2	1	50.8	32	3	35	15.8
	Native species	0.7	30.0				44.7	27	0	30	14.7
T'unglu	"Improved" species	4.8	16.0	9	0.5	1	31.3	28	3	31	0.3
	Native species	1	15.0				26.5	20	0	23	3.5
Linan	"Improved" species	5.6	32.0	11	2	1	51.6	32	3	35	16.6
	Native species	0.7	30.0				44.7	27		30	14.7
Chiahsing	"Improved" species	2.6	24.0	11	2	1	43.6	28	3	31	12.6
	Native species	0.7	22.5				37.2	24		27	10.0
Ts'ungteh	"Improved" species	4.4	24.0	11	2	1	42.4	28	3	31	11.4
	Native species	0.7	22.5				37.2	24		27	10.2
Tehts'ing	"Improved" species	4.4	32.0	11	2	1	—	—		—	—
	Native species	0.7	30.0				—	—		—	—
Yühang	"Improved" species	4.8	32.0	11	2	1	—	—		—	—
	Native species	0.5	30.0				—	—		—	—
Fuyang	"Improved" species	4.4	24.0	9	1	1	—	—		—	—
	Native species	0.5	22.5				—	—		—	—
Shaohsing	"Improved" species	5.6	32.0	11	2	1	30.8	25	3	28	2.8
	Native species	1	30.0				26.5	20		23	3.5

		Cost of Production						Income			
		Eggs	Mulberry	Labour	Firewood or Charcoal	Other	Total	Cocoon	Others	Total	Loss
Fenshui	"Improved" species	$4.4	$ 16.0	$9	$0.5	$1	$42.8	$28	$3	$31	$11.8
	Native species	1	15.0				37.5	24		27	10.5
Haiyen	"Improved" species	4.8	24.0	11	2	1	42.8	28	3	31	11.8
	Native species	1	22.5				37.5	24		27	10.5
P'inghu	"Improved" species	4.8	24.0	11	2	1	40.8	28	3	31	9.8
	Native species	1	22.5				35.2	64		27	8.2
Chiashan	"Improved" species	4.8	24.0	10	1	1	15.6	32	3	55	16.5
	Native species	0.7	22.5				45.7	27		30	15.7
Hanghsien	"Improved" species	5.6	32.0	11	2	1	51.6	30	3	33	18.6
	Native species	0.7	30.0				45.7	27		30	15.7
Wuhsing	"Improved" species	5.6	03.0	11	2	1	50.8	28	3	31	19.8
	Native species	0.7	30.0				44.7	24		27	17.7
T'unghsiang	"Improved" species	4.8	32.0	11	2	1	28.1	25	3	28	0.1
	Native species	0.7	30.0				32.2	20		23	0.2
Hsiaofeng	"Improved" species	4.8	12.8	9	0.5	1	—	—		—	—
	Native species	0.7	12.0				—	—		—	—
Hsinteng	"Improved" species	4.8	16.0	9	11	1	31.8	25	3	28	3.8
	Native species	0.7	15.0				26.5	20		23	3.5
Yüch'ien	"Improved" species	4.8	16.0	9	1	1	—	—		—	—
	Native species	0.5	15.0				—	—		—	—
Ch'anghua	"Improved" species	4.8	16.0	9	1	1	31.3	25	3	28	3.3
	Native species	0.7	15.0				26.0	80		23	3.0

		Cost of Production					Income				
		Eggs	Mulberry	Labour	Firewood or Charcoal	Other	Total	Cocoon	Others	Total	Loss
Anchi	"Improved" species	$4.8	$ 16.0	$9	$0.5	$0.5	—	—		—	—
	Native species	0.7	15.0				—	—		—	—
Haining	"Improved" species	4.8	32.0	11	2	2	$50.8	$28	$3	$31	$19.8
	Native species	0.7	30.0				44.7	24		27	17.7
Hsinch'ang	"Improved" species	4.8	32.0	10	1	1	48.8	30	3	33	15.8
	Native species	0.7	30.0				42.7	15		28	14.7
Shangyü	"Improved" species	4.8	24.0	10	2	2	41.8	30	3	33	8.8
	Native species	0.8	22.5				36.4	24		27	9.3
Wuk'ang	"Improved" species	4.8	32.0	1	1	1	—	—		—	—
	Native species	0.7	30.0				—	—		—	—
Ch'anghsing	"Improved" species	4.8	32.0	11	1	1	49.8	30	3	33	16.8
	Native species	0.7	30.0				43.7	24		27	16.7

In 1925 the Provincial Vocational School established five silkworm nurseries to provide farmers with "improved" eggs and to teach scientific methods of rearing. The next year saw two more nurseries in the Province, and 15 more in the west. Forty-nine instructors were employed, and an annual expense of $50,000 alloted for spreading knowledge of modern methods of rearing silkworms and improving eggs. The work of this institution was suspended as a result of political changes, and in 1927 the Chekiang Provincial Silkworm Experimental Station was promoted by the Commission of Reconstruction. In the same year the China Union Silkworm and Mulberry Improving Association (中國合衆蠶桑改良會) established

three branches offices in eastern Chekiang. About 280 families received tuition in improved methods of culture from 12 instructors and 550 egg-cards were distributed to farmers, each sheet giving 14 catties of cocoons on average. February, 1928, saw the inauguration of the Provincial Experimental Station, with 18 branch stations in five sections in the prefectures of Hangchow, Chiahsing, Wuhsing, and Shaohsing, that at Chuchi being a joint office with the China Union Silkworm and Mulberry Improving Association. Among branch stations that at Hsiaoshan is the largest, having seven sub-stations under it. The following table gives an idea of the work done by these organizations during 1928:—

SPRING

	Stations	Instructors	Families Receiving Instruction	Cards Distributed	Average Cocoon Production per Card (catties)	Average Price (per picul of fresh cocoons)
Hsiaoshan	5	35	440	2,845	22.6	$55.0
Ch'angan	4	9	95	1,900	16.5	51.5
Linghu (菱湖)	4	9	150	1,500	17.5	51.0
Yuanhua (袁化)	4	9	99	895	18.0	51.0
Haiyen	1	2	19	100	18.0	52.0
Total	..18	64	803	7,240	18.52	52.2

FALL

	Stations	Instructors	Families Receiving Instruction	Cards Distributed	Average Cocoon Production per card (catties)	Average Price (per picul of fresh cocoons)
Hsiaoshan	5	18	142	205	17.18	$1.00
Ch'angan	3	7	19	80	18.50	0.50
Linghu	3	7	33	77	11.33	0.50
Yuanhua	4	9	33	80	16.05	0.50
Haiyen	1	2	31	56	19.00	0.50
Total	16	43	258	498	16.05	——

CHINA UNION SILKWORM AND MULBERRY IMPROVING ASSOCIATION

		Stations	Instructors	Egg Cards Distributed	Families Visited	Average Cocoon Production per Card (Catties)	Average Price (per picul of fresh cocoons)	Average Price of Egg Cards
Spring	Eastern Chekiang	1	2	230	75	15.4	$51.2	$0.50
	Western Chekiang	4	25	1,650	960	15.0	52.0	0.50
	Total	5	27	1,880	1,035	15.2	51.6	0.50
Fall	Western Chekiang	4	14	4,000	——	18.0	——	1.00

EDUCATIONAL ORGANIZATION

Stations	Instructors	Families Visited	Egg Cards Distributed	Price (per picul of fresh cocoons)
1	15	30	123	$62.0

In 1929, owing to good results obtained from the improved eggs issued the previous year, farmers were very active in buying eggs from branch stations, and about 50,000 cards of spring eggs were sold. Believing that the supply of eggs might not be enough to meet the demand, the experimental station encouraged the establishment of more nurseries as private enterprises. In the autumn of the same year the raw silk improved considerably, and in order to meet the demand 50,000 cards of eggs were ordered from farms in Kiangsu, and distributed to farmers. In addition, silk filatures were brought into

touch with farmers by the stations, so that the former might distribute egg-cards to the latter for rearing. Thanks to fine weather and the vigorous efforts of instructors, the autumn cocoons turned out to be very good, and consequently the work of the station made great strides. The following table shows particulars of the work done by stations in various sections during the two seasons of 1929:—

SPRING

Section	Stations	Instructors	Families Visited	Egg Cards Distributed	Average Cocoon Production per Card (Catties)	Price of Egg Cards	Price (per picul of fresh cocoons)
Hsiaoshan	15	59	2,003	37,781	18.05	$0.30	$55.2
Chia-Hu	11	42	704	4,860	18.22	0.30	61.5
						0.60	
Ning-Yen	4	19	127	1,969	17.87	0.30	51.24
						0.50	
Ch'enghsien	1	2	37	3,400	19.00	0.30	54.00
Total	31	122	2,871	48,010	81.39	——	55.48

FALL

Hsiaoshan	15	60	2,081	11,327	21.50	1.00	60.83
Chia-Hu	14	46	2,849	12,320	15.82	1.00	57.41
Ning-Yen	7	24	2,217	8,123	14.14	1.00	62.21
Hangchow	10	48	2,033	8,737	20.75	——	68.35
Ch'enghsien	1	8	448	700	16.00	1.20	60.0
Total	47	186	10,348	41,207	18.64	——	61.76

The rapid advance in the work of the experimental station may be attributed to the encouragement given by the National Government. As domestic egg cards were not sufficient to meet the demand, 100,000 sheets were bought abroad in 1930, and private enterprise in making egg-cards was also started that year. The following figures show the activities of these stations in 1930:—

SPRING

Section	Stations	Instructors	Families Visited	Egg Cards Distributed	Average Cocoon Production Per Card (catties)	Price (per picul of fresh cocoons)	Price of Egg Cards
Hsiaoshan	10	47	2,417	63,547	22.59	$56.6	$0.70—0.90
Chia-Hu	16	47	3,074	28,471	28.32	76.3	0.80—0.90
Ninghai	5	10	853	7,004	29.70	73.7	0.60—0.90
Hangchow	5	13	918	4,100	23.40	59.6	— —
Total	36	117	7,262	103,132	26.00	66.5	— —

FALL

Hsiaoshan	10	44	1,712	51,199	22.68	54.8	1.2
Chia-Hu	12	41	2,668	14,334	17.09	48.7	1.2
Ning-Yen	5	10	318	6,535	18.04	54.4	1.2
Hangchow	7	21	1,771	11,403	16.05	49.5	1.2
Total	34	116	6,469	83,471	18.08	51.8	—

In 1931, owing to reorganization of the Provincial Government the funds of the Chekiang Provincial Silkworm Experimental Station were cut from $330,000 to $50,000, and the branch stations in the Hsiaoshan section, Ch'angan and Haiyen in the Ningyen section, and Hsincheng and Shuanglin in the Chiahu

section, were put under the management of the China Union Silkworm and Mulberry Improving Association. Production during the spring season was quite good, thus giving the farmers more enthusiasm in rearing autumn worms and hence a large demand of the eggs. With the rapid increase in the number of private egg farms, the output of egg-cards that year was over 480,000, but owing to floods in Kiangsu and Chekiang the excessive supply resulted in the price of egg-cards, going down to about 15 cents. Moreover, during the rearing season the weather was so bad that the output of cocoons was greatly reduced, and the confidence of farmers in the "improved" species was greatly affected. The following figures show the work of the two nurseries in 1931:—

PROVINCIAL STATIONS

	Section	Stations	Instructors	Egg Cards Sold	Families Visited	Average Cocoon Production per card (cotton)	Price of Egg Cards		Price (per picul of fresh cocoon)
Spring	Chia-Hu	7	41	23,968	2,833	21.00	$1.00		$54.28
	Ning-Yen	2	7	3,948	635	21.50	1.00		52.00
	Yühang	2	13	5,400	1,185	17.50	0.06		51.50
	Total	11	61	33,316	4,653	20.00	0.87		52.59
Fall	Chia-Hu	6	31	9,430	1,999	17.08	58.03	1.00	0.60
	Ning-Yen	3	14	9,398	1,076	18.00	58.00	1.00	0.60
	Yühang	5	20	9,190	1,945	15.04	58.5	1.00	0.06
	Total	14	65	28,018	5,020	17.00	88.2		0.80

CHINA UNION SILKWORM & MULBERRY IMPROVING ASSOCIATION

	Section	Stations	Instructors	Families Visited	Egg Cards Sold	Average Cocoon Production Per Card (catties)	Price (per picul of Fresh Cocoons)	Price of Egg Cards
Spring	Eastern Chekiang	1	10	168	50,000	23.00	$52.0	$1.0
	Western Chekiang	4	8	766	10,620	23.05	53.0	1.0
	Total	5	18	1,934	15,602	23.25	52.5	1.0
Fall	Eastern Chekiang	2	5	260	40,000	16.00	58.0	0.20
	Western Chekiang	6	9	1,003	7,634	17.00	58.0	1.20
	Total	8	14	1,263	47,634	16.06	58.0	1.20

EDUCATIONAL ORGANIZATIONS

	Section	Stations	Instructors	Families Visited	Egg Cards Sold	Average Cocoon Production Per Card (catties)	Price (per picul of Fresh Cocoons)	Price of Egg Cards
Spring	Jenior High School	3	5	120	600	17.00	$60.0	$1.00
	Chekiang University	4	5	500	12,840	9.04	60.0	1.00
Fall	Junior High School	3	4	98	7,012	15.00	66.0	1.00
	Total	7	9	598	19,852	12.02	63.0	1.00

PRIVATE ENTERPRISE: WEST LAKE FARM

	Stations	Instructors	Families Visited	Egg Cards sold	Average Cocoon Production Per Card (catties)	Price (per p'cul of fresh cocoons)	Price of Egg Cards
Spring	4	7	1,500	7,208	23.50	$62.5	$0.80
Fall	11	21	4,800	28,887	18.05	66.6	0.90

In the spring of 1932, as the result of Japanese hostilities in Shanghai, the local filatures suspended operations, and although the output of silkworm eggs was reduced to less than 200,000 cards, almost half were destroyed by fire. In order to meet the situation the Provincial Silkworm Nursery organized nine silkworm co-operative societies at Hanghsien and Hangchow, and the authorities of the First Silkwworm and Mulberry Improving Section bought from the China Union Silkworm and Mulberry Improving Association about 50,000 cards of fine species for sales, and the sale of mixed breed eggs was prohibited. As a result of these measures the cocoons produced were considered of fine quality. The following figures show the work done in 1932 by the organizations mentioned:—

FIRST SILKWORM & MULBERRY IMPROVING SECTION

	Stations	Instructors	Families Visited	Egg Cards Sold	Average Cocoon Production Per Card (catties)	Price (per picul of fresh cocoons)	Price of Egg Cards
Fall	15	63	14,559	51,902	17.04	$39.9	$1.0

PROVINCIAL STATIONS

	Section	Station	Instructor	Families Visited	Egg Cards Sold	Average Cocoon Production Per Card (catties)	Price (fresh cocoon per picul)	Price of Egg Cards
Spring	Chia-Hu	4	24	1,968	19,083	19.25	$26.2	$0.80
								0.40
	Ning-Yen	1	2	95	560	15.00	25.0	0.70
								0.80
	Yühang	1	4	600	3,900	22.00	33.5	0.60
	Hsiaoshan	1	4	250	1,000	13.00	25.0	0.40
	Total	7	34	2,913	24,543	17.03	27.4	——
Fall	Yühang	8	45	2,450	12,559	19.07	39.1	0.07
								0.8
	Chia-Hu	1	2	140	640	20.00	39.0	0.75
	Wuk'ang	1	3	230	1,300	18.03	38.0	0.60
	Total	10	50	2,820	14,499	19.04	38.0	——

CHINA UNION SILKWORM AND MULBERRY IMPROVING ASSOCIATION

	Section	Station	Instructor	Families Visited	Egg Cards Sold	Average Cocoon Production Per Card (catties)	Price (fresh cocoon per picul)	Price of Egg Card
Spring	Eastern Chekiang	5	14	555	18,975	19.79	$28.7	$1.2
	Western Chekiang	5	14	566	35,589	22.00	22.4	0.8
	Total	10	28	1,121	54,564	21.01	25.5	1.0
Fall	Western Chekiang	6	15	695	5,581	18.00	37.3	0.85

EDUCATIONAL ORGANIZATION

	Station Instructor	Families Visited	Egg Cards Sold	Average Cocoon Production Per Card (catties)	Price (fresh cocoons per picul)	Price of Egg Cards
Spring	10 23	355	3,783	18.05	$32.0	$0.7
Fall	10 13	260	1,052	19.04	53.0	0.8

PRIVATE ENTERPRISE

		Station	Instructor	Egg Cards Sold	Average Cocoon Production Per Card (catties)	Price (fresh cocoons per picul)	Price of Egg Cards
Spring	Hsi Hu	3	5	5,239	19.06	$36.6	$0.60
Fall	Hsi Hu	4	7	14,982	22.05	42.7	0.80
	Hsi Chen	1	2	3,000	22.00	45.0	0.60
	Total	5	9	17,982	22.25	43.8	0.70

CHAPTER IX

TEA

TEA, one of China's principal agricultural products, was once also a leading article of export, but when India, Ceylon, and Japan came into the world market China tea began to lose its position in international trade. At present, South Africa is the chief market for green tea from China, which forms the bulk of the export, while the United States and Great Britain absorb most of the black China tea exported, Russia being the only purchaser of tea-bricks. The decline of tea exports has been very serious, but an encouraging sign was seen in the figures for last year. The total quantity of tea shipped through the port of Shanghai alone, according to the Bureau of Inspection and Testing of Commercial Commodities, was about 600,000 piculs, as against 539,000 in 1932, an increase of over 20,000 piculs.

The decline in the China tea trade is attributable to more than one cause, among which low standards of quantity and quality are of importance. During the past two or three years the production of tea in most provinces has been very low. In most of the producing areas, like Hunan, Hupeh, Kiangsi, Anhui, and Fukien, there had been many disturbances due to banditry, civil strife, etc., and production consequently was greatly reduced. Chekiang was fortunate in being free from such troubles, and remains a stable source of supply.

About 20 per cent of China's production of tea comes from Chekiang, and of the 75 *hsien* in that Province no less than 65 are tea-growing districts. The soil and climate of Chekiang are both suitable for tea cultivation, and with the exception of the plains near Kiangsu and islands along the coast, tea is found more or less everywhere.

TEA-GROWING AREA

The area of tea plantations in the province is estimated at over 522,000 *mou*, yielding nearly 57,000 piculs of black tea and 370,000 piculs of green annually, valued at about $17,848,000.

The most famous producing centers in Chekiang are Lungtsing (龍井), Hangchow, and P'ingshui (平水), Shaohsing, but the leaf grown in these two places is small in quantity, and these names are also applied to leaf grown in neighboring centres. The *lungtsing* tea is one of the most expensive varieties produced in the country, and usually commands a price ten or even twenty times that of other descriptions. Commercially, however, *lungtsing* is of little importance because of the small quantity produced. The *p'ingshui* tea is grown in Hsiaoshan, Ch'enghsien, Chuchi, and other districts formerly belonging to Shaohsing prefecture, P'ingshui being the local collecting center near Shaohsing. The annual output used to amount to about 120,000 piculs, but has decreased considerably during the last two or three years.

The area devoted to tea-growing is extremely difficult to estimate, as there are few plantations of any considerable size, the plants being mostly grown in small patches on the hillsides, between fields of other crops, or in irregular plots near houses. Consequently, the following table, though giving an approximate idea of the area devoted to tea in each *hsien*, is not to be taken as exact.

TEA-GROWING AREA IN CHEKIANG

	Mou		*Mou*
Municipality of Hangchow ..	2,000	Iwu	200
Hanghsien	12,000	Yungk'ang	1,350
Fuyang	85,000	Wui	1,000
Yühang	72,348	P'ukiang	65
Linan	13,500	T'angch'i	800
Yüch'ien	28,400	Chühsien	250
Ch'anghua	2,920	Kiangshan	10,000

	Mou		*Mou*
Wuhsing	1,000	Ch'angshan ...	2,000
Ch'anghsing ..	2,625	K'aihua	1,885
Wuk'ang	5,000	Chienteh	1,000
Anchi	2,984	Shunan	120
Hsiaofeng	22,866	T'unglu	250
Ninghsien	2,000	Suian	2,500
Ts'uch'i	1,270	Shouch'ang	300
Fenghua	3,500	Fenshui	2.500
Chenhai	3,243	Yungchia	850
Shaohsing	24,000	Juian	1,250
Hsiaoshan	1,200	Lots'ing	580
Chuch'i	30,000	P'ingyang	28,000
Yüyao	14,290	T'aishun	8,000
Shangyü	2,900	Yühuan	150
Ch'enghsien ..	27,000	Lishui	1,400
Hsinch'ang ...	16.000	Ts'ingt'ien	600
Linhai	2,500	Chinyun	3,500
Huangyen	2.250	Sungyang	1,400
Ninghai	200	Suich'ang	3,000
Wenling	32,000	Lungchuan	500
T'ient'ai	9,840	Chingyuan	50
Hsienchü	17,500	Yunho	1,200
Chinhua	1,000	Hsuangp'ing ..	1,300
Lanch'i	3,250	Chingning	250
Tungyang	1,500	Total	522,336

PLANTING

The method of cultivation is about the same in all Chekiang districts. As tea-growing rapidly exhausts the fertility of the land, a new field is usually started on virgin soil, the site selected being cleared and harrowed before sowing can be done. If situated on a hillside, the plot is made into several terraces, a low stone wall being built along the lower margin of each to prevent soil and fertilizers being washed away by the rains. About 30 to

40 days are required for one man to prepare one *mou* of land.

One *mou* requires about three *tou* (斗) of seeds, which are kept in small pits from December to the spring, when sowing takes place. Holes about a foot in diameter are made in the ground and into each about a dozen seeds are placed, a space of five or six feet being left between every two rows. Fields are harrowed twice a year, once in March and again in September. Weeding takes place about five or six times a year, or as may be required. Fertilization is carried out once or twice a year. Planters in Chekiang do not trim their shrubs, though sometimes the branches of very old plants are cut off in order to allow shoots near the base to develop into new branches. Plants thus cut must have a rest of two or three years before the leaves can be picked.

Picking does not take place until four years after planting, and for the first year or two only leaves at the top of the shrubs are picked. Generally tea is picked three times a year, but occasionally a fourth picking is added, the season of picking lasting from the beginning of April to the end of August.

OUTPUT

As there are no plantations of considerable size, it is impossible to ascertain the output by area. In Fenghua, a *mou* yields about 360 catties of first picking and 180 catties of second picking, while in Ts'uch'i, about 280 catties is obtained in the first picking and 150 catties in the second. In Hanghsien the first picking yields only about 25 catties, and the second and third picking about 45 catties each. The output of a district is not proportional to its tea-growing area. For instance, Shaohsing, with 24,000 *mou* of tea, produces about 120,000 piculs, while in Fuyang, where there are 85,000 *mou* of tea plantations, the yearly output amounts to only about 42,500 piculs. The annual output of various Chekiang districts is as follows:

TEA OUTPUT (*Fired*)

	Black Tea (Piculs)	Green Tea (Piculs)	Total (Piculs)
Municipality of Hangchow	459	115	574
Hanghsien	200	5,000	5,200
Fuyang	——	42,500	42,500
Yühang	11,940	27,860	39,800
Linan	810	7,290	8,100
Yüts'ien	——	2,000	2,000
Ch'anghua	——	850	850
Wuhsing	——	500	500
Ch'anghsing	250	2650	2,900
Wuk'ang	100	1,900	2,000
Anchi	——	1,900	1,900
Hsiaofeng	——	8,000	8,000
T'unghsien	——	950	950
Ts'uch'i	——	1,244	1,244
Fenghua	——	2,200	2,200
Chenhai	370	2,710	3,080
Shaohsing	30,000	90,000	120,000
Hsiaoshan	——	297	297
Chuchi	2,000	8,500	10,500
Yüyao	——	10,000	10,000
Shangyü	——	3,000	3,000
Ch'enghsien	——	21,600	21,600
Hsinch'ang	——	12,000	12,000
Linhai	——	5,460	5,460
Huangyen	——	650	650
Ninghai	——	4	4
Wenling	——	32,000	32,000
T'ient'ai	——	1,588	1,588
Hsienchü	——	3,000	3,000
Chinhua	——	2,000	2,000
Lanch'i	90	430	520
Tungyang	——	5,500	5,500
Iwu	——	300	300
Yungk'ang	198	666	864
Wui	——	2.000	2,000

	Black Tea (Piculs)	Green Tea (Piculs)	Total (Piculs)
P'ukiang	——	4,875	4,875
T'angch'i	20	120	140
Chühsien	——	410	410
Kiangshan	——	3,044	3,044
Ch'angshan	——	2,500	2,500
K'aihua	1,965	2,182	4,147
Chienteh	——	1,800	1,800
Shunan	130	6,900	7,030
T'unglu	534	2,263	2,797
Suian	——	8,300	8,300
Shouch'ang	100	360	460
Fensui	——	3,800	3,800
Yungchia	——	400	400
Juian	350	890	1,240
Lots'ing	——	650	650
P'ingyang	6,400	4,500	10,900
T'aishun	500	2,500	3,000
Yühuan	——	398	398
Lisui	——	100	100
Ts'ingt'ien	——	1,300	1,300
Chingyun	——	5,300	5,300
Sungyang	200	2,000	2,200
Suich'ang	——	910	910
Lungch'uan	——	4,500	4,500
Ch'ingyuan	30	1,550	1,580
Yunho	——	180	180
Hsuanp'ing	——	1,000	1,000
Chingning	——	300	300
Total	56,646	369,696	426,442

PRICES

Owing to the numerous varieties of leaf grown, prices differ very widely and even the same variety is usually sold at several prices on account of differences in processing and location of the fields. Furthermore, prices of tea, like other commodities, fluctuate from time to time. In the following table the highest, lowest, and normal prices recorded in 1932 in each producing district are given, together with the estimated value of the total local output:—

	Black Tea (Per picul)			Gree Tea (Per picul)			Estimated Value of Total Output		
	Highest	Lowest	Normal	Highe t	Lowest	Normal	Black Tea	Green Tea	Total
Municipality of Hangchow ..	$400	$ 20	$100	$600	$ 40	$200	$ 45,900	$ 23,000	$ 68,900
Hanghsien	480	40	100	960	70	150	20,000	750,000	770,000
Fuyang	—	—	—	120	30	50	——	2,125,000	2,125,000
Yühang	100	10	40	150	18	50	477,600	1,393,000	1,870,600
Linan	22	10	15	72	10	35	12,150	255,150	267,300
Ch'anghua	60	10	40	100	25	40	——	38,000	38,000
Wushing	—	—	—	120	30	50	——	42,500	42,500
Ch'anghsing	100	10	25	220	16	30	——	15,000	15,000
Wuk'ang	120	12	20	130	12	25	6,250	66,250	72,500
Anch'i	—	—	—	120	16	26	2,000	49,400	51,400
Hsiaofeng	—	—	—	125	30	60	——	114,000	114,000
Ninghsien	—	—	—	100	12	40	——	120,000	120,000
Yüch'ien	60	12	25	160	13	45	——	90,000	90,000
Tsuch'i	—	—	—	49	15	26	——	32,344	32,344
Fenghua	—	—	—	50	25	30	——	66,000	66,000
Chenhai	150	15	45	160	14	50	16,650	135,500	152,150
Shaohsing	95	15	40	100	20	50	1,200,000	4,500,000	5,700,000
Hsiaoshan	—	—	—	90	12	40	——	11,880	11,880
Chuch'i	150	64	16	160	32	48	32,000	408,000	440,000
Yüyao	—	—	—	50	10	20	——	200,000	200,000
Shangyü	—	—	—	40	20	30	——	60,000	60,000
Ch'enghsien	—	—	—	50	15	22	——	475,200	475,200

	Black Tea (Per picul)			Gree Tea (Per picul)			Estimated Value of Total Output		
	Highest	Lowest	Normal	Highe t	Lowest	Normal	Black Tea	Green Tea	Total
Hsinch'ang	$—	$—	$—	$ 55	$19	$35	$ ——	$ 420,000	$420,000
Linhai	—	—	—	32	16	20	——	109,200	109,200
Huangyen	—	—	—	30	10	18	——	11,700	11,700
Ninghai	—	—	—	30	20	25	——	200	200
Wenling	—	—	—	160	20	50	——	1,600,000	1,600,000
T'ient'ai	40	15	20	30	12	20	——	31,760	31,760
Hsienchü	—	—	—	80	40	50	——	150,000	150,000
Chinhua	—	—	—	210	30	50	——	100,000	100,000
Lanch'i	72	48	56	295	34	56	5,040	24,080	29,120
Tungyang	40	9	20	50	10	25	70,000	137,500	207,500
Iwu	—	—	—	30	10	20	——	6,000	6,000
Yungk'ang	80	8	40	100	10	50	7,920	33,300	41,220
Wui	—	—	—	100	20	33	——	66,000	66,000
P'ukiang	—	—	—	30	10	20	——	97,500	97,500
Lanch'i	32	12	20	42	26	32	400	3,840	4,240
Chühsien	—	—	—	45	20	35	——	14,350	14,350
Kiangshan	—	—	—	42	18	31	——	94,364	94,364
Ch'angshan	—	—	—	40	20	30	——	75,000	75,000
K'aihua	12	7	10	32	28	30	19,650	65,460	85,110
Chienteh	—	—	—	20	8	14	——	25,200	25,200
Shunan	35	11	25	70	11	35	3,250	241,500	244,750
T'unglu	80	20	40	100	20	55	21,360	124,465	145,825

	Black Tea (Per picul)			Green Tea (Per picul)			Estimated Value of Total Output		
	Highest	Lowest	Normal	Highest	Lowest	Normal	Black Tea	Green Tea	Total
Suian	$—	$—	$—	$ 70	$15	$15	$ ——	$ 290,500	$290,500
Shouch'ang	35	20	27	20	40	65	2,700	23,400	26,100
Fenshui	—	—	—	120	20	48	——	182,400	182,400
Yungchia	—	—	—	130	20	48	——	19,200	19,200
Juian	30	10	15	80	21	49	5,250	43,610	48,860
Lots'ing	—	—	—	160	25	50	——	32,500	32,500
P'ingyang	—	—	—	27	17	22	——	99,000	99,000
T'aishun	25	11	14	30	14	19	7,000	47,500	54,500
Yühuan	—	—	—	100	30	50	——	19,900	19,900
Lisui	—	—	—	100	12	30	——	3,000	3,000
Ts'ingt'ien	—	—	—	100	12	30	——	39,000	39,000
Chinyun	—	—	—	60	15	30	——	159,000	159,000
Sungyang	50	20	20	30	25	50	4,000	100,000	104,000
Suich'ang	—	—	—	70	10	40	——	36,400	36,400
Lungch'uan	—	—	—	130	40	60	——	270,000	270,000
Ch'ingyuan	100	33	50	160	50	50	1,500	77,500	79,000
Yunho	—	—	—	100	25	40	——	7,200	7,200
Hsuanp'ing	—	—	—	35	12	28	——	28,000	28,000
Chingning	—	—	—	40	16	25	——	7,500	7,500
TOTAL	—	—	—	—	—	—	1,960,620	15,887,253	17,847,873

MARKETING

Fresh leaf cannot be stored for more than two days, so growers dry it immediately after picking. Tea thus dried is called *mao cha* (毛 茶) and is sold to tea hong or exporters who pack it into wooden chests before shipment abroad. Sometimes agents go to the various producing districts and buy *mao cha*, either on their own account or on behalf of some hong or exporter.

The total annual tea output of Chekiang in 1932 was 426,000 piculs. Of this amount, over 332,000 piculs were sold outside the producing districts, the remainder being consumed locally or packed for export, as shown in the following table:—

	Local Consumption (piculs)	Packed for Export (piculs)	Quantity sold out of the district (piculs)	Principal Markets
Municipality of Hangchow	574	——	——	——
Hanghsien	3,150	——	2,050	Manchuria, Hopei, Honan, Shantung, Kuangtung.
Fuyang	850	——	41,650	Hangchow
Yühang	500	——	39,300	„
Linan	450	——	7,650	„
Yüch'ien	260	——	1,740	„
Ch'anghua	390	——	460	„
Wuhsing	500	——	——	.....
Changhsing	1,200	——	1,700	Hangchow
Wuk'ang	280	——	1,720	„
Anchi	405	——	1,495	„
Hsiaofeng	410	——	7,590	„
Ninghsien	950	——	——	——
Ts'uch'i	1,244	——	——	——
Fenghua	1,000	1,200	——	——
Chenhai	1,900	720	460	Ninghsien
Shaohsing	5,800	3,894	110,306	Shangyü, Ninghsien
Hsiaoshan	297	——	——	——
Yüyao	3,200	4,650	2,150	Ningpo, Shaohsing, Hangchow.
Shangyü	1,500	1,500	——	——
Ch'enghsien	2,140	3,273	16,187	Ningpo, Shaohsing, Hangchow.
Hsinch'ang	1,210	2,057	8,733	Ningpo, Shaohsing, Hangchow.
Linhai	2,140	——	3,320	Newchuang
Huangyen	150	——	500	S'hai, Newchuang, Soochow.
Ninghai	4	——	——	——
Wenling	2,983	——	29,017	Shanghai, Newchuang.
T'ient'ai	1,330	——	258	S'hai, Ningpo, Soochow.
Hsienchü	1,105	——	1,895	Soochow, Newchuang.
Chinhua	1,170	——	830	Lanch'i

	Local Consumption (piculs)	Packed for Export (piculs)	Quantity sold out of the district (piculs)	Principal Markets
Lanch'i	430	——	90	Hangchow, Chiahsing, Ningpo, Shaohsing.
Tungyang	2,318	——	3,182	Hangchow, Chiahsing, Hsiashih, Shanghai.
Iwu	300	——	——	——
Yungk'ang	666	——	198	——
Wui	402	——	1,598	Hangchow.
P'ukiang	1,091	——	3,784	"
T'angch'i	90	——	50	Lungyu, Lanch'i.
Chühsien	410	——	——	——
Kiangshan	1,344	——	1,700	Hangchow.
Ch'angshan	670	——	1,830	"
Chienteh	538	——	1,262	"
K'aihua	666	1,053	2,428	"
Shunan	1,080	1,714	4,236	Hopei, Manchuria, the U.S.S.R.
T'unglu	508	——	2,289	Hangchow, Shuian.
Shuian	506	734	——	——
Shouch'ang	335	——	125	Hangchow
Fensui	201	——	3,599	"
Yungchia	400	——	——	——
Juian	1,240	——	——	——
Lots'ing	650	——	——	——
P'ingyang	3,371	——	7,529	Shanghai, Hankow.
T'aishun	816	——	2,184	Shanghai, Foochow.
Yühuan	398	——	——	——
Ts'ingt'ien	1,300	——	——	——
Lishui	100	——	——	——
Chinyun	989	——	4,311	Hangchow.
Sungyang	607	——	1,593	Neighboring districts.
Shuich'ang	910	——	——	——
Lungch'uan	700	——	3,800	Yungchia.
Chingyuan	475	——	1,105	Foochow.
Yunho	180	——	——	——
Hsuanp'ing	404	——	596	Wui
Chingning	300	——	——	——
TOTAL	64,137	22,232	332,413	

Mao cha is differently packed in various districts, sometimes in cloth bags, gunny sacks, or bamboo crates. The weights of bags and crates also differ greatly in different places, though those of 100 catties are most common.

Tea exports from Chekiang are first centered at Wenchow, Ningpo, and Hangchow, and from these places Chekiang tea goes to foreign countries or other provinces of China through Shanghai. A considerable quantity goes direct from Wenchow to Foochow.

According to Customs returns, Chekiang tea exports through the three ports of Wenchow, Ningpo, and Hangchow amount to from 200,000 to 300,000 piculs annually. Leaf from Anhui is sometimes exported through Chekiang ports, but the quantity is usually very small. The following table shows the tea exports from Chekiang during recent years:—

	From Hangchow		From Ningpo		From Wenchow		Total		Percentage of China's Total Tea Export	
	Quantity (piculs)	Value (Hk. Tls.)	Quantity (piculs)	Value (Hk. Tls.)	Quantity (piculs)	Value (Hk. Tls.)	Quantity (piculs)	Value (Hk. Tls.)	Quantity	Value
1922	104,083	4,840,125	79,985	2,484,607	16,020	172,751	200,088	7,497,483	26.29	40.10
1923	143,711	4,563,423	115,335	3,783,152	36,553	522,188	295,599	8,868,762	27.48	32.35
1924	129,519	4,070,492	112,620	3,006,816	31,930	613,370	274,069	7,690,679	25.54	27.07
1925	134,930	5,275,352	133,513	4,552,312	38,696	744,880	307,139	10,572,544	24.08	29.39
1926	171,587	6,874,291	128,775	3,319,963	35,695	971,425	336,057	11,165,679	23.36	27.93
1927	158,053	6,500,500	104,596	4,085,580	23,368	582,505	286,017	11,168,585	21.41	29.30
1928	187,973	7,972,059	128,293	4,819,592	19,374	498,258	335,640	13,289,909	17.58	25.03
1929	180,635	8,504,528	122,734	4,806,551	18,760	530,066	322,129	13,841,145	21.08	28.71
1930	156,990	6,638,847	114,317	3,643,306	12,230	260,338	283,537	10,542,491	24.76	29.16
1931	136,627	5,923,985	106,359	2,386,173	20,358	450,397	263,344	8,760,554	22.78	23.79

CHAPTER X

MEDICINAL HERBS

CHINESE medicines are composed very largely of the products of plants and herbs, and Chekiang is one of the principal sources of supply for *pei mu* (貝母, *Eritillaria verticillata*, Wild. var. *thumbergii*, Bak.), *pai chi* (白芨, *Paconia albiflora*, Pall.), and *mai tung* (麥冬, the moniliform root of *Lirriope graminifalia*), which are extensively produced in the Province. An area of about 6,000 *mou* is used for the cultivation of *pei mu*, and the annual output amounts to more than 8,000 piculs, worth about half a million dollars. About 10,000 *mou* are devoted to growing *mai tung*, with an annual output of 20,000 piculs, worth $1,200,000, while *pai chi* fields amount to more than 35,000 *mou*, the annual output being nearly 70,000 piculs, worth approximately $1,300,000. Many other plants used for making medicines, such as *yuan hu* (元胡), *Coryaalis ambigua*, Ch. Schl.), china-root, sorosin, mulberry leaves, peach kernels, loquat leaves, turnip seed, pumpkin seed, *ching chieh* (荆芥, *Nepeta japonica*, Maxim), *hsia ku tsao* (夏枯草, *Prunella vulgaris*, L.) *ku shen tsu* (苦參子), *Saphora fiavescens*, Ait. var. *Galegoides*, Hemsl.), *chueh ming*, (决明), *Cassia Tora*, L.) *hsuan shen* (玄參, *Scrophularia oldhami*, *tsien chin tsu* (千金子, *Euphorbia lathyris*), *ti huang* (地黄, *Lirriope graminifalia*), etc., are also cultivated. According to statistics published by the National Reconstruction Commission, more than 20 varieties of medicinal herbs are grown in the Municipality of Hangchow alone.

PEI MU

Pei mu, or the corms of various species of bulbous liliacious plants, is an indispensable feature of the Chinese pharmacopæia. The Szechuan product is called *chuan pei* (川貝), and that of Chekiang, *hsiang pei* (象貝). The

former fetches a much higher price, being better appreciated by Chinese physicans for its medicinal value.

In Chekiang the *pei mu* plant is an annual, the tuber or bulb of the current year's crop being planted in autumn and ready for gathering the following summer. The plant grows a little more than a foot high, and often branches into two shoots. The leaves are pinnate, and the bulb, which is the only portion used in medicine, is dug out of the ground like a potato.

Previous to planting *pei mu*, a field is carefully harrowed, and on the top of the ridges, holes are made to a depth of about three inches, in each of which a bulb is planted. For one *mou* of land, about 10 piculs of bulbs are required, but frequently *pei mu* is planted in mulberry fields as a subsidiary crop. Bulbs are bedded in October or November, germination starts in a month or two, and by February young shoots begin to appear above the ground, and grow rapidly with the advent of spring. In April the plant, having grown to about a foot in height, will bear white flowers, which must be quickly removed lest the blooming impair the bulb yielding capacity. The flowers, however, do not all bloom at the same time, so during the flowering season close watch has to be kept in order to pick off every flower that makes its appearance. By the end of May or the beginning of June, the *pei mu* bulbs are gathered, which is done by loosening the surrounding earth, and then uprooting the plant, the bulbs at the end of the stems being picked off. Each plant usually bears two bulbs, and the yield per *mou* is about 20 piculs. The size of the bulbs varies from that of a potato to a pigeon-egg.

In preparing *pei mu* for market there are three stages—washing, skinning, and drying. The newly gathered bulbs are placed in a bamboo crate and left in a running stream for some time, during which the soil clinging to bulb is carefully removed by hand. Skinning is done with the aid of lime, the bulbs being put in a wooden vat containing water where, after maceration, the skin of the bulbs is somewhat loosened. A small quantity

of lime is added to hasten the process. The contents of the vat are stirred by hand until the skins of the *pei mu* are entirely removed through the bulbs rubbing against one another, and after being dried in the sun for five or six days, they are ready for market.

It costs approximately $300 to cultivate a *mou* of *pei mu*, made up as follow: Bulbs for sowing, $235, rent $25, fertilizer and wages, $30, lime and other miscellaneous items, $7. One *mou* yields about 20 piculs of bulbs, which after preparation give about 10 piculs of dried *pei mu*. At $60 a picul, a mou of *pei mu* brings to the grower about $600, of which about half is profit.

Formerly, *pei mu* was only produced in one district in Chekiang, Hsiangshan, hence the name *hsiang pei* was given to the product of Chekiang as distinguished from supplies from Szechuan and other province. At present, however, *pei mu* is cultivated in Chienchiao (筧橋), Hangchow, and Ningkang (寧岡), in Ninghsien, which is now by far the largest producing center, as about 5,000 *mou* are devoted to *pei mu* cultivation, and growers number more than 5,000. The total annual output of the district amounts to about 8,000 piculs, worth approximately $480,000.

The supply produced in Hangchow and Hsiangshan is barely sufficient for local consumption, and practically no exports are made. The product of Ninghsien, however, owing to its large volume and good communication facilities, is exported to Kuangtung, Hopei, provinces in the Yangtse Valley, and Hongkong.

In former years the price of *pei mu* fluctuated very widely, ranging from $20 to $160 per picul, but since the organization in Ninghsien of the Pei Mu Growers Co-operative Association (貝母運銷合作社), in March, 1933, a minimum price of $60 per picul has been fixed, and the prevailing price during the year was about $70 per picul. The Association is organized to protect the interests of growers and to maintain prices, and no member may sell his product except through the Association and at a price fixed by the committee.

MAI TUNG

Mai tung, also used in Chinese medicine, is the moniliform root of *Lirriope graminifolia*, var. *densiflor*, Maxim., an evergreen perennial, with long, narrow leaves. The plant blooms in April or May and bears green fruit or seed-pods in late autumn. The root is yellowish-white in color, and when dried assumes the appearance of a string of beads.

The plant flourishes in dry loamy soil, and will not grow in damp or clay soil. It is propagated by cuttings, and planting takes place in May, when the field selected is ridged and sections of old root, with the stalk and leaves attached are bedded in the ridges to a depth of half an inch, the holes being covered with soil in little mounds, which are about 2½ feet apart. As the crop cannot be gathered until the third year other crops, such as soya beans and cotton, are grown between the *pei mu* plants during the first and second years, but in the third year no subsidiary crop can be cultivated, as it might impair development of the roots. The soil is fertilized three or four times a year with night soil, and field is weeded before applying fertilizer.

Although *mai tung* is also produced in Szechuan and Kuangtung, the product of Chekiang dominates the market owing to its superior quality and the good communication facilities existing in the Province. Of the two producing districts in Chekiang, Hangchow and Yüyao, the latter is much more important, the total annual output of the former being less than 50 piculs, not sufficient for local consumption. In Yüyao the area of *mai tung* fields is about 4,000 *mou*, yielding 3,000 piculs of *mai tung*. As the output has decreased of late in comparison with former years, the price went from $60 to $100 in March, 1933.

Changhoshih (長河市) and Kantun (坎墩), villages in the northern part of Yüyao, are the principal markets for *mai tung* and in April dealers gather in those two places to buy direct from the planters, or more often through the *ya hong* (牙行, commission agents), who charge the seller a commission of 2 or 3 per cent. The dealers dry

and pack the *mai tung* collected and send it to Ninghsien for sale to the medicine hongs there.

In Changhoshih there is a guild of *mai tung* dealers, composed of about 20 members.

PAI CHI

Pai chi is the root of a perennial plant (*Paeonia albiflora*, Pall.) and considered by Chinese physicians as a very effective remedy for many maladies.

The cultivation of *pai chi* is a long and complicated process. Seeds are sown in February or March, and about 10 days later seedlings begin to appear. The plant reaches a height of about two feet in July, when flowers appear on top of the plant. Seeding takes place in September, and in October the stems are cut down with the seeds on, while the root is allowed to remain in the ground. In July the following year the new shoots from the old root again bears flowers, which are picked off to increase the development of the root, and in September the roots are dug out, and by now have become *pai chi*, in the shape of groundnuts. The *pai chi* thus obtained are placed in bamboo crates filled with dry earth, and kept through the winter until February of the third year, when the *pai chi* is planted again in the field and left until September, when the root has grown to the size of an egg or a ball. This fresh *pai chi*, after being dug up, is kept in dry earth until sold. The dealers who collect *pai chi* from growers dry the roots after having gathered a quantity, and about 30 catties of dried *pai chi* are obtainable from a picul of fresh roots. One *mou* of land yields from four to seven piculs of fresh *pai chi*, equal to 120 catties up to about two piculs of dried *pai chi*.

The district of Hsinch'ang is the principal producing center in the Province, though *pai chi* is also grown in several other districts. The following table shows the area under cultivation and total annual output in various districts:

	Area	Output (Piculs)	Price per picul	Value of Total Output
Yungk'ang	213	425	$30	$ 12,750
Tungyang	960	1,920	20	38,400
Shuich'ang	1,000	2,000	30	60,000
Wenling	7,750	15,500	16	248,000
Yüts'ien	7,150	14,300	18	257,400
Hsienchü	7,500	15,000	19	285,000
Hsinch'ang	10,250	20,500	20	410,000
Ch'enghsien	680	1,360	20	27,200
Total	35,503	71,005	—	$1,338,750

Dried *pai chi* is classified into five grades according to quality. The best grade fetches about $40 per picul, and the lowest about $20. Hunan, Kuantung and Szechuan are the chief markets for *pai chi* of the better quality, while the inferior quality is sold in Tientsin and Newchuang. Sun-dried *pai chi* is consumed locally.

HSUAN SHEN

Hsuan shen is the root of *Scrophularia oldhami*, Oliv, a perennial growing to a height of four or five feet, with oval-shaped leaves. The plant blossoms in August or September, the blue flowers yielding black seeds in October. From one fascicled main root four or five rootlets, the so-called *hsuan shen* in Chinese medicine, are obtained.

In Chekiang, *hsuan shen* is principally produced in Chienchiao, Hangchow, and two varieties are cultivated, the "goat horn" and "turnip" variety, the former yielding roots which are crooked at the thinner end, while the latter resembles a small turnip. The "goat horn" variety, however, is more fibrous and lighter than the "turnip" variety, and the average yield per *mou* is less, hence, the "turnip" variety is more widely cultivated.

The plant grows well in loamy soil, but a field planted with *hsuan shen* needs a rest of three or four years. The crop is liable to certain highly infectious diseases, which may destroy the whole crop in a few days. When a plant dies it is immediately uprooted to prevent the disease from spreading. Many insects and worms are also very harmful to the plant, and must be removed by applying lime.

The *hsuan shen* output of Chienchiao amounts to 10,000 piculs annually, the price varying from $3 to $5 per picul. After purchasing supplies from growers, Hangchow drug dealers have the *hsuan shen* graded and further prepared before shipping to Ningpo, Shaohsing, Shanghai, and other ports in South China.

TI HUANG.

Ti huang is the root of *Rehmannia lutea*, Maxim, a perennial with large pinnate leaves. It grows well in well-drained loamy soil, and does best is mild and moderately dry weather. In early summer it bears light yellow blossoms, and yields dark brown seeds if planted in a sufficiently warm place. The average root is about the size of a finger.

Commercially *ti huang* is divided into summer and winter crops, the latter being the more compact and less perishable, and fetches a higher price. The winter crop is planted in summer and harvested in winter, while the summer crop is planted in spring. The summer crop is gathered in July or August, and the winter crop in January or February, about four months after planting.

Before gathering, one or two plants are first uprooted and the roots examined to ascertain whether the crop is ripe. Only when the root is reddish-brown in color, it is ready for gathering, and it taken up too young, is liable to perish or fails to fetch a good price. The roots are usually dried in the sun for a few hours, though this is not essential if the weather is dry and the crop is to be disposed of immediately. If the farmer wishes to hold the crop for a better market or for use as stock root, the drying process is prolonged to one or two days, and root so dried can be kept for a long time. In a good year a *mou* of land yields about 2,000 catties of fresh *ti huang* root, but a poor crop will not amount to 1,000 catties. The gathered roots are kept in a dry place on a layer of straw instead of being in direct contact with the ground, and if properly looked after will remain in good condition for several months.

Ti huang is also grown in Hunan, Hupeh, Szechuan and Anhui. The total yearly output of Hangchow is estimated at 800 to 900 piculs, sold mostly to local drug dealers, who ship part of their purchases to Shanghai for distribution to cities in the Southern provinces.

The root is extensively prescribed by Chinese medical men, and is commonly used in its dried form, but occasionally in a compound decoction. In preparing this large pieces of *ti huang* root are boiled in Chinese rice wines with vermilion powder, and in making the best quality, this process is repeated nine times.

PEPPERMINT

Peppermint is largely cultivated by the farmers of Chienchiao, Hangchow, and several varieties are grown in China. That popularly known as *chih wan* (赤丸) is said to be the best, and is of foreign origin, while the peppermint grown in Chienchiao is the indigenous variety.

Peppermint is propagated from root cuttings, and planting takes place in May or June, or in October, but late spring or early summer is a more suitable season than late autumn. The field in which peppermint is to be grown is always deeply ploughed, and the earth raised into ridges about a foot and a half wide. Along the ridges hollows are scooped out and the ashes from burnt straw sprinkled about as fertiliser. Cuttings from large-sized roots about four and five inches long are then set in the hollows, about half a foot apart, and covered, fertilizer being applied four times during the season. If planted in winter, the first application takes place in April, the second in May, the third in July, and the fourth in September.

Chienchiao farmers gather two crops of peppermint, the first in July and the second in October. When the stalks and leaves turn yellow, the plant is ready for gathering. Peppermint grows best in a dry and warm climate, and at harvest time fair weather is necessary. The stalks are either uprooted or cut, tied into bundles with straw, and dried in the sun for three or four days. About 150 catties of dried peppermint are gathered from

one *mou* for a first crop and 200 catties for a second crop at Chienchiao, where the total yearly output is estimated at 1,500 piculs, a picul being worth $5 or $6.

CHUEH MING

Chueh ming is the seed of *Cassia Tora*, L., an annual about five feet in height. It is planted in March or April in well-drained, sandy soil, and bears a small yellow blossom in July or August. After the flowers have dropped off, dark seed-pods are seen, which grow to a length of four or five inches, containing from half a dozen to twenty greenish seeds. The plant turns yellow in September, and is then cut and dried in the sun, after which the seeds are taken out of the pods and stored. A *mou* of land yields about a picul of dried *chueh ming* seeds.

TSIEN CHIN TSU

Tsien chin tsu is the seed of *Euphorbia lathyris*, a biennial with dark purple blossoms. The plant flourishes in a warm, damp climate and loamy soil seeds being sown in September. The field selected is harrowed into ridges four feet broad, and holes about one foot apart are made on the ridges, into which four or five seeds are dropped. In the following June the leaves and stems begin to wither, and the plant is uprooted and left in the field exposed to sun and rain until the rind covering the seeds decomposes. The seeds are thrashed out and husked in a stone mortar. One *mou* of land yields about a picul of dried and husked seeds, valued at from $6 to $10.

CHAPTER XI

FRUITS

THANKS to its mild climate and fertile soil, large varieties and quantities of fruit are grown in Chekiang. and loquats of T'angch'i (塘棲), Hangchow, dates of Chinhua, and chestnut and small walnuts of Hangchow, Chiahsing, and Wuhsing are particularly popular. The Province produces annually about 3,855,000 piculs of fruit, valued at $18,829,000, and the following table shows details of the output, value, and consumption of the principal varieties of fruit grown in the province:—

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)	Quantity Exported (*Piculs*)
Sugar cane	853,600	512,160	266,600	587,000
Peaches	347,193	1,994,420	258,460	88,733
Plums (*Prunus Mume*)	207,668	917,009	129,810	73,458
Oranges	622,716	5,065,861	219,240	403,476
Yang mei	312,671	4,250,380	201,524	111,147
Loquats	76,752	514,457	43,631	33,121
Persimmon	153,522	671,022	87,289	66,233
Pears	23,300	159,150	14,300	9,000
Plums (*Prunus communis*)	159,393	469,894	121,588	37,805
Chestnuts	53,201	562,185	31,044	22,157
Walnuts	36,950	355,750	3,810	33,140
Water chestnuts	400,000	920,000	195,000	250,000
Watermelons	324,600	635,000	237,600	87,000
Dates	70,451	662,570	19,621	50,830
Lotus Root	164,000	322,000	164,000	—
Lotus Seed	6,400	398,000	250	6,150
Hua hung	10,718	77,924	5,218	5,500
Feitsu nuts	5,210	101,280	3,010	2,200
Apricots	23,655	201,666	22,451	1,204
Pomegranates	2,412	12,104	2,412	—
Cherries	794	16,520	584	210
TOTAL	3,855,206	18,829,352	2,031,842	1,823,361

SUGAR CANE

T'angch'i (塘棲), Hangchow, is the principal center for sugarcane in Chekiang. Cane is propagated by cuttings taken from stems of the current crop, about eight or nine inches in length, with two or three buds. The stock stem is first soaked in lukewarm water to hasten the sprouting of the buds, and is then planted.

The loamy soil and abundant rainfall of T'angch'i make this area well adapted to sugar-cane cultivation. There are two varieties of cane produced in T'angch'i, "red" and "green." The former has a red-skinned stem and is usually eaten raw state, while the stem of the latter is green and containing more sugar than the other variety can be used in sugar-mills. The total annual output of T'angch'i cane is estimated at about 400,000 piculs, of which the "green" variety represents about 70 per cent.

Prices range from $10 to $32 for 1,000 pieces, and the principal markets are Hangchow, Huchow, Chiahsing, and Shanghai. The following table shows the output and consumption of sugar-cane in each producing district of the province:—

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)	Quantity Exported (*Piculs*)
Hangchow	450,000	270,000	150,000	300,000
P'ingyang	150,000	90,000	5,000	145,000
Yungchia	41,600	24,960	1,600	40,000
Iwu	100,000	60,000	50,000	50,000
Yungk'ang	12,000	7,200	60,000	2,000
Shuian	100,000	60,000	50,000	50,000
TOTAL.....	853,600	512,160	266,600	587,000

PEACHES.

Among the fruits produced in Chekiang, the peach is the most abundant, being grown in almost every district. During recent years the peaches of Fenghua have become quite famous in Shanghai and Hangchow. A large quantity of the "honey" variety peach is shipped from the province every year, and many peach-gardens, run on modern lines, have been established.

There are many varieties of peaches grown in the province, the most popular and best being the "honey" variety. The total peach output of the province amounts to about 247,000 piculs, valued at approximately $1,994,000. The bulk of the output is absorbed by large cities such as Shanghai, Hangchow, Ningpo, and Shaohsing. The following table shows the output and consumption of peaches in each producing districts:—

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)	Quantity Exported (*Piculs*)
Hangchow Municipality	574	13,080	274	300
Hanghsien	4,598	32,186	1,534	3,064
Fuyang	1,000	2,000	200	800
Linan	350	1,750	105	245
Yüch'ien	20	100	20	——
Hsinteng	40	400	20	20
Ch'anhua	2,000	10,000	2,000	——
Chiahsing	840	8,400	60	780
Chiashan	1,200	12,000	1,200	——
Haiyen	3,000	45,000	3,000	——
Ts'ungteh	1,800	15,000	1,800	——
T'unghsiang	182	2,730	100	82
Wuhsing	30,000	210,000	30,000	——
Ch'anghsing	17,500	52,500	10,500	7,008
Tehts'ing	1,320	19,800	1,320	——
Wuk'ang	165	858	123	42
Anchi	288	2,156	288	——
Hsiaofeng	248	1,240	248	——
Ninghsien	10,000	100,000	6,000	4,000
Ts'uch'i	2,500	26,500	2,500	——
Fenghua	30,000	90,000	12,000	18,000
Chenhai	24,614	123,070	20,614	4,000
Hsiangshan	32	320	32	——
Nant'ien	350	2,000	300	50
Shaohsing	3,000	6,000	3,000	——
Chuchi	13,000	32,500	7,000	6,000
Yüyao	24,090	240,900	13,090	11,000
Shangyü	5,000	40,000	3,000	2,000
Ch'enghsien	10,000	20,000	7,500	2,500
Hsinch'ang	7,400	22,200	4,932	2,468
Huangyen	4,800	24,000	3,000	1,800
Ninghai	300	3,000	300	——
Wenling	500	4,000	500	——
T'ient'ai	1,349	10,792	1,214	135

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)	Quantity Exported (*Piculs*)
Hsienchü	1,500	4,500	1,500	—
Chinhua	4,000	8,000	4,000	—
Lanch'i	1,800	7,200	1,800	—
Tungyang	30,000	75,000	30,000	—
Iwu	1,400	5,760	1,400	—
Yungk'ang	6,000	30,000	6,000	—
Wui	386	4,246	386	—
T'angch'i	127	254	100	27
Chühsien	8,460	169,000	5,642	2,820
Lungyü	500	1,500	500	—
Kiangshan	130	520	130	—
Ch'angshan	600	1,200	600	—
K'aihua	90	360	90	—
Chienteh	1,440	5,760	1,440	—
Shunan	50	150	50	—
T'unglu	20,000	40,000	15,000	5,000
Shuian	100	1,000	100	—
Shouch'ang	400	1,600	400	—
Yungchia	2,190	8,760	2,190	—
Juian	15,000	105,000	1,500	13,500
P'ingyang	12,800	64,000	12,800	—
Yühuan	3,000	15,000	2,000	1,000
Lishui	15,000	21,000	15,000	—
T'singt'ien	1,000	6,000	1,000	—
Sungyang	2,560	12,800	1,560	1,000
Suich'ang	1,800	1,800	1,800	—
Lungch'uan	12,000	35,000	12,000	—
Yunho	1,600	12,000	900	700
Hsuanp'ing	1,200	2,400	800	400
TOTAL.....	347,193	1,994,420	258,460	88,733

PLUMS (*PRUNUS MUME*)

Although plums are grown in many districts, those from Hangchow Municipality and Hanghsien are considered the best. Confectioners in Shanghai make large purchases of Hangchow plums for making preserves. The total plum output of the Province amounts to about 207,000 piculs, valued at approximately $917,000, Shanghai being the principal market. The output and consumption in each district are as follows:—

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)	Quantity Exported (*Piculs*)
Hangchow Municipality	15,000	84,000	8,000	7,000
Hanghsien	44,000	264,000	14,668	29,332
Chiahsing	1,500	4,500	1,500	—
Chiashan	900	6,300	900	—
Haiyen	3,000	36,000	3,000	—
Ts'ungteh	2,020	3,450	1,020	—
Wuhsing	750	4,500	750	—
Ch'anghsing	12,000	36,000	4,000	8,000
Tehts'ing	195	19,500	195	—
Wuk'ang	56	448	40	16
Hsiaofeng	216	1,080	216	—
Fenghua	20,000	80,000	12,000	8,000
Chenhai	15,510	46,500	15,510	—
Hsiangshan	24	192	24	—
Shaohsing	468	1,124	468	—
Chuch'i	10,000	20,000	10,000	—
Yüyao	50	150	50	—
Ch'enghsien	3,000	15,000	3,000	—
Huangyen	2,400	9,600	2,400	—
Ninghai	400	1,000	400	—
Wenling	200	1,000	200	—
T'ient'ai	4,000	80,000	4,000	—
Chinhua	400	2,000	400	—
Lanch'i	1,200	3,600	1,200	—
Iwu	400	1,400	400	—
T'angch'i	559	29,295	49	10
Ch'angshan	900	2,700	900	—
K'aihua	60	300	60	—
Shunan	700	3,150	300	400
T'unglu	60,000	60,000	40,000	20,000
Shouch'ang	100	400	100	—
P'ingyang	4,900	19,600	4,900	—
Yühuan	160	800	160	—
Lishui	1,200	6,600	1,200	—
T'singt'ien	250	150	115	—
Sungyang	560	1,120	560	—
Hsinch'ang	640	1,280	640	—
Lungch'uan	50	240	50	—
Yunho	1,050	68,250	550	500
Hsuanp'ing	350	1,750	150	200
TOTAL	207,443	888,009	133,985	73,458

ORANGES

Grown in several districts, the oranges of Huangyen are considered the best. Trees are propagated by grafting, which takes place in March or April. Orange trees need a large quantity of fertilizer when they reach maturity, but while young only diluted night soil is applied. For mature trees fertilizer is applied three times a year, the first in March, just before the flowering season, the second in September, when the trees are bearing fruit, and third in December, after the oranges have been gatherd.

The tree flowers in March or April and begins to bear fruit in May. The time for picking varies with different varieties, ranging from the end of October to the end of December. Oranges are packed in bamboo crates containing about 60 catties each, lined with thick straw paper to prevent the fruit becoming dried or damaged.

The yield of orange trees depends upon their age. When they first begin to bear, the proceeds from the sale of fruit are barely enough to pay expenses, but a *mou* of mature trees yields as much as 4,000 catties of fruit, valued at from $80 to $250, and the growers' profit sometimes amounts to $100 per *mou*.

Oranges are made into confectionery and also used in Chinese medicine.

The following table shows the output and consumption in the province:—

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)	Quantity Exported (*Piculs*)
Hanghsien	200	3,000	134	66
Haiyen	1,000	20,000	1,000	—
Wuhsing	50	500	50	—
Wuk'ang	98	588	88	10
Shaohsing	3	16	3	—
Hsinch'ang	120	—	120	—
Huangyen	600,000	4,800,000	200,000	400,000
T'ient'ai	1,290	20,640	1,290	—
Iwu	42	—	42	—
Yungk'ang	5,000	30,000	5,000	—
Chühsien	7,200	144,000	4,150	3,050
Kiangshan	50	200	50	—
Ch'angshan	198	792	148	50

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)	Quantity Exported (*Piculs*)
Yungchia	1,815	9,075	1,515	300
Juian	1,000	6,000	1,000	—
P'ingyang	3,600	21,600	3,600	—
Yunho	1,050	9,450	1,050	—
TOTAL.....	622,716	5,065,861	219,340	403,476

YANG MEI

Yang mei or erroneously called Chinese strawberry is a summer fruit, of which there are two varieties: cream and purple. The former is produced only in Yüyao and Ts'uch'i, while the purple variety is found in a number of districts. This fruit can not be stored for more than a week, being highly perishable in nature, so the market is confined to Shanghai and neighboring districts. The output and consumption in each district are as follows:—

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)	Quantity Exported (*Piculs*)
Hanghsien	1,000	3,000	600	400
Ch'anghsing	25,000	150,000	10,000	15,000
T'such'i	1,200	8,400	400	800
Fenghua	5,000	15,000	3,000	2,000
Chenhai	26,791	2,679,100	19,754	7,037
Hsiangshan	175	700	175	—
Shaohsing	14,220	227,520	14,220	—
Hsiaoshan	600	3,000	600	—
Chuch'i	600	1,680	300	300
Yüyao	100	500	40	60
Shangyü	50,000	250,000	30,000	20,000
Huangyen	100,000	500,000	60,000	40,000
Ninghai	600	3,000	500	100
Wenling	48,000	240,000	28,000	20,000
T'ient'ai	2,700	46,600	2,700	—
Lanch'i	6,100	21,350	2,000	4,100
Iwu	80	450	80	—
T'unglu	160	960	160	—
Shouch'ang	60	240	60	—
Yungchia	7,500	22,500	6,150	1,350
Lots'ing	8,000	12,000	8,000	—
P'ingyang	11,400	45,600	11,400	—
T'aishun	150	900	150	—

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)	Quantity Exported (*Piculs*)
Lishui	3,200	17,600	3,200	—
Lungch'uan	35	280	35	—
TOTAL.....	312,671	4,250,380	201,524	111,147

LOQUATS

T'angch'i, Hangchow, is the principal centre for loquats in Chekiang, the product of that region being larger in size and more juicy in state than the fruit grown elsewhere, and commanding a much higher price. T'angch'i produces annually about 44,400 piculs of loquats, or more than 50 per cent of the total output of the province. The following table shows the output and consumption in each district:—

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)	Quantity Exported (*Piculs*)
Hanghsien	44,400	266,400	14,800	29,600
Haiyen	200	1,600	200	—
Tehts'ing	420	2,100	420	—
Wuk'ang	258	4,128	137	121
Hsiaofeng	132	2,244	132	—
Hsiangshan	18	180	18	—
Shaohsing	240	1,536	240	—
Ch'enghsien	200	2,000	200	—
Hsinch'ang	108	324	108	—
Huangyen	9,600	57,000	7,200	2,400
Ninghai	18	18	18	—
T'ient'ai	516	10,320	516	—
Chinhua	2,000	6,000	2,000	—
Lanch'i	1,500	6,750	1,500	—
Yungk'ang	3,600	18,000	2,600	1,000
Wui	80	400	80	—
T'angch'i	16	112	16	—
Chühsien	1,501	15,010	1,501	—
Kiangshan	6	48	6	—
Ch'angshan	3,060	24,480	1,060	—
K'aihua	64	512	64	—
Chienteh	300	2,100	300	—
Shunan	30	840	30	—
Shouch'ang	100	20,000	100	—
Yungchia	3,000	30,000	3,000	—
P'ingyang	1,300	10,400	1,300	—
Lishui	3,250	26,000	3,250	—
Ts'ingt'ien	15	75	15	—

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)	Quantity Exported (*Piculs*)
Shuich'ang	320	1,280	320	—
Yunho	500	4,000	500	—
TOTAL.....	76,752	514,457	43,631	33,121

PERSIMMON

Three varieties of persimmon are produced in Chekiang, *fang shih* (方 柿), which is rather square in shape and large-sized, *wang shih* (汪 柿), which is small and round, and *chi shih* (漆 柿), which is used for making lacquer. Only the two first varieties are edible. Chuchi is the principal growing district for *chi shih*, the annual output amounting to 30,000 piculs. The lacquer obtained by pressing *chi shih* is packed in barrels of 300 catties and sold in Wenchow, Hangchow, and Shanghai. The total annual output of the other two varieties is also about 30,000 piculs, the bulk being consumed locally. The following table shows the output and consumption:—

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)	Quantity Exported (*Piculs*)
Hanghsien	8,800	26,400	5,867	2,933
Fuyang	300	1,500	300	—
Haiyen	600	3,600	600	—
Ts'ungteh	704	4,500	704	—
Wuhsing	300	1,500	300	—
Ch'anghsing	18,000	54,000	5,000	13,000
Wuk'ang	235	1,175	135	100
Anchi	30	150	30	—
Hsiaofeng	144	576	144	—
Shaohsing	396	396	396	—
Chuch'i	60,000	120,000	30,000	30,000
Shangyü	24,000	125,000	10,000	14,000
Hsinch'ang	180	460	180	—
Huangyen	550	2,750	550	—
Ninghai	48	240	48	—
Wenling	52	156	52	—
T'ient'ai	18,378	183,780	18,378	—
Lanch'i	15	45	15	—
Chühsien	3,366	33,660	2,366	—
Lungyu	200	1,000	200	—

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)	Quantity Exported (*Piculs*)
Kiangshan	20	80	20	—
Ch'angshan	900	3,600	900	—
K'aihua	130	520	130	—
Shunan	35	70	35	—
Shouch'ang	360	1,512	360	—
P'ingyang	7,500	60,000	7,500	—
Lishui	4,200	25,200	—	4,200
T'singt'ien	200	800	200	—
Chinyun	3,000	15,000	1,000	2,000
Sungyang	376	1,880	376	—
Shuich'ang	500	1,500	500	—
Lungch'uan	3	12	3	—
TOTAL.....	153,522	671,022	87,289	66,233

PEARS

Pears are not extensively grown in Chekiang, and the product is inferior in quality. Yunho and Chuchi, witn an annual output of 15,000 and 8,000 piculs respectively, are considered the principal growing districts. The product of Yunho is sold in Yungchia and T'aichow, while that of Chuch'i is mostly exported to Shanghai and Hangchow. The following table shows the output and consumption in producing district:—

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)	Quantity Exported (*Piculs*)
Chuch'i	8,000	48,000	2,000	6,000
Ch'enghsien	100	200	100	—
Huangyen	700	3,500	200	500
Hsienchü	100	600	100	—
Iwu	300	2,100	300	—
P'ukiang	2,000	10,000	1,000	1,000
Lishui	1,600	16,000	600	1,000
Yunho	10,500	78,750	10,000	500
TOTAL.....	23,300	159,150	14,300	9,000

PLUMS (*PRUNUS COMMUNIS*, HUDS.)

This variety of plum is much inferior in quality to that previously mentioned. Chuch'i, with a total annual output of about 60,000 piculs, is the principal growing

center, and a considerable quantity of fruit is sent ever year to Shanghai, where it is used for making jam. The following table shows the output and consumption in each district:—

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)	Quantity Exported (*Piculs*)
Haiyen	1,200	9,600	1,200	—
T'unghsiang	2,000	10,000	1,000	1,000
Wuhsing	250	2,000	250	—
Wuk'ang	86	516	41	45
Anchi	72	200	72	—
Fenghua	10,000	20,000	5,000	5,000
Chenhai	18,630	65,205	18,630	—
Hsiangshan	48	480	48	—
Shaohsing	278	1,390	278	—
Chuch'i	60,000	72,000	30,000	30,000
Yüyao	50	150	50	—
Ninghsien	2,000	6,000	2,000	—
Hsinch'ang	595	2,480	595	—
Huangyen	800	4,000	100	700
Wenling	180	1,800	180	—
T'ient'ai	1,515	27,270	1,515	—
Hsienchü	1,500	4,500	1,500	—
Chinhua	3,000	12,000	2,000	1,000
Lanch'i	1,000	2,000	1,000	—
Iwu	400	1,200	400	—
Yungk'ang	45,000	180,000	45,000	—
Wui	85	510	85	—
Chühsien	582	2,910	582	—
Lungyu	700	1,400	700	—
Kiangshan	32	128	32	—
Ch'angshan	320	960	320	—
K'aihua	180	720	180	—
Chienteh	2,730	8,190	2,730	—
Shunan	30	75	30	—
Shuian	300	2,400	300	—
Shouch'ang	280	1,260	280	—
Fenshui	30	45	10	20
P'ingyang	1,020	6,100	1,020	—
Yühuan	65	390	25	40
Lishui	3,000	15,000	3,000	—
Ts'ingt'ien	75	375	—	—
Hsinch'ang	960	3,840	960	—
Yunho	400	2,800	400	—
TOTAL.....	159,393	469,890	121,588	37,805

CHESTNUTS

Chestnuts are largely grown in Chekiang, particularly in Chuch'i, where the annual output amounts to about 6,000 piculs. There are many varieties grown in the Province, that called *yu kuang li* (有光栗) being considered the best. Hangchow, Shanghai, and Shaohsing are the chief markets for Chekiang chestnuts. The following table shows the output and consumption in each district:—

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)	Quantity Exported (*Piculs*)
Fuyang	2,000	18,000	400	1,600
Linan	1,400	5,600	700	700
Hsinteng	1,000	8,000	300	700
Ch'anghua	5,000	10,000	5,000	—
Wuhsing	4,000	40,000	1,000	3,000
Wuk'ang	125	1,250	22	103
Anchi	600	—	600	—
Hsiaofeng	335	335	120	215
Funghua	1,000	10,000	1,000	—
Shaohsing	500	3,500	500	—
Hsiaoshan	200	1,400	200	—
Chuchi	6,000	84,000	3,000	3,000
Shangyü	6,000	120,000	2,000	4,000
Ch'enghsien	100	1,200	100	—
Huangyen	3,600	64,800	3,600	—
T'ient'ai	1,683	16,830	674	1,009
Chinhua	500	4,000	500	—
Lanch'i	1,200	12,000	1,200	—
Tungyang	600	4,200	400	200
Wui	5,500	66,000	300	5,200
T'angch'i	13	130	13	—
Chühsien	55	1,100	55	—
Ch'angshan	900	7,200	900	—
K'aihua	320	1,280	320	—
Chienteh	60	300	60	—
Shunan	50	120	50	—
Shuian	100	1,000	100	—
Shouch'ang	160	2,240	160	—
Fenshui	2,000	20,000	1,800	200
T'aishun	110	500	70	30
Lishui	3,000	15,000	3,000	—
T'singt'ien	100	1,200	100	—
Chinyun	3,000	21,000	800	2,200
Hsinch'ang	2,000	20,000	2,000	—
TOTAL.....	53,201	562,185	31,044	22,157

WALNUTS (SMALL)

The small walnut is a special product of Chekiang, being found only in the districts of Yüch'ien, Ch'anghua and Shunan, and sent to Hangchow. The following table shows the output and consumption:—

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)	Quantity Exported (*Piculs*)
Yüch'ien	250	1,500	250	—
Ch'anghua	35,000	350,000	3,000	32,000
Shunan	1,700	4,250	560	1,140
TOTAL.....	36,950	355,750	3,810	33,140

WATER CHESTNUTS

Water chestnuts grow on lake margins, marshes, and ditches, or any damp place where there is a sediment of decaying vegetable matter. Huangyen is the chief producing district, though the fruit is also found in other districts. Details of the production and consumption are shown in the following table:—

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)	Quantity Exported (*Piculs*)
Chuch'i	10,000	20,000	5,000	5,000
T'ungyang	60,000	240,000	60,000	—
Hanghsien	50,000	100,000	50,000	—
Huangyen	280,000	560,000	80,000	200,000
TOTAL.....	400,000	920,000	195,000	205,000

WATERMELONS

Watermelons are extensively grown in Chekiang, details of output and consumption being shown in the following table:—

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)	Quantity Exported (*Piculs*)
Lishui	16,000	19,200	4,000	12,000
Haining	24,000	48,000	24,000	—
Linan	30,000	90,000	30,000	—
Hsinteng	1,000	15,000	1,000	—
P'inghu	150,000	225,000	100,000	50,000
Ts'uch'i	35,000	35,000	10,000	25,000
Shaohsing	60,000	180,000	60,000	—
Lanch'i	600	1,800	600	—
Shunan	3,000	6,000	3,000	—
T'unglu	5,000	15,000	5,000	—
TOTAL.....	324,600	635,000	237,600	87,000

DATES

The dates grown at Chinhua and neighboring districts, known as *nan tsao* (南棗) are famous throughout the country. Preserved *nan tsao* is made by baking selected fresh dates, and the process of making preserved dates is more complicated. After being sorted lines are cut on the skin of the dates, which are then boiled in water for ninety minutes, sugar being added. When the boiled dates have been baked dry the work of preserving is done, and the fruit is packed in barrels containing 76 catties. The market price for preserved dates ranges from $8 to $17 per picul. The following table shows the output and consumption in each district:—

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)	Quantity Exported (*Piculs*)
T'ient'ai	18,096	361,920	8,096	10,000
Chinhua	2,000	40,000	500	15,000
T'ungyang	26,000	208,000	10,000	16,000
Lanch'i	2,000	40,000	500	15,000
Iwu	500	15,000	300	200
P'ukiang	800	5,600	200	600
K'aihua	55	550	25	30
Shunan	21,000	31,500	—	21,000
TOTAL.....	70,451	662,570	19,621	50,830

LOTUS ROOT

Lotus root is the buried stem of *Nelumbo nucifera*, Gaertn., and although abundant in Chekiang, very little is exported fresh. It is a common practice for a grower to dry lotus-root and grind it into flour. Genuine lotus bour mostly comes from Tungyang and Iwu, other supplies particularly in Hangchow, being usually adulterated with potato flour. The following table shows the output and consumption of lotus-root in each producing district:—

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)
Chuchi	16,000	48,000	16,000
T'ungyang	48,000	44,000	48,000
Iwu	60,000	150,000	60,000
Hanghsien	40,000	80,000	40,000
TOTAL.....	164,000	322,000	164,000

LOTUS SEED

Lotus seed is that of the plant mentioned above, but seed and root of commercial value are seldom found together, because a plant which yields the one usually produces the other of very poor quality. Consequently the districts producing lotus root are not the same as those producing lotus seeds. The following table shows the output and consumption in each producing district:—

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)	Quantity Exported (*Piculs*)
Lanch'i	400	18,000	150	250
Shouch'ang	2,000	140,000	100	1,900
Lungyu	4,000	240,000	—	4,000
TOTAL.....	6,400	398,000	250	6,150

FEITSU NUTS.

This is the fruit of *Torreya grandis*, Fortune, and Chuchi is the principal producing district. There are two varieties, *shang fei* (香 榧) and *yuan fei* (圓 榧), the former being superior in flavor. Consumption and output in each producing district are shown in the following table:—

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)	Quantity Exported (*Piculs*)
Linan	1,210	35,280	1,210	——
Chuchi	3,000	60,000	1,000	2,000
Tungyang	1,000	6,000	800	200
TOTAL.....	5,210	101,280	3,010	2,200

HUA HUNG

This is the fruit of *Pirus malus*, L. var. *tomentosa*, Koch. Chuchi is the principal producing district in Chekiang, the annual output amounting to about 85,000 piculs. The following table shows the output and consumption in each producing district:—

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)	Quantity Exported (*Piculs*)
Chuchi	8,500	50,000	3,000	5,500
Huangyen	1,000	6,000	1,000	——
T'ient'ai	1,218	21,924	1,218	——
TOTAL.....	10,718	77,924	5,218	5,500

APRICOTS

T'ient'ai is the principal producing district of apricots in the Province, with Chenhai next. The crop in Chekiang districts is usually consumed locally, as it does not pay to transport the fruit any considerable distance, on account of its low price. The following table shows the output and consumption in each of the producing districts:—

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)	Quantity Exported (*Piculs*)
Hanghsien	600	1,200	400	200
Haiyen	200	1,600	200	——
Wuhsing	80	800	80	——
Hsiaofeng	188	18,800	88	——
Chenhai	8,232	32,928	8,232	——
Shaohsing	4	18	4	——
Hsinch'ang	136	408	136	——
Huangyen	500	4,000	500	——
T'ient'ai	10,032	120,384	9,028	1,004
Chühsien	600	3,000	600	——
Ch'angshan	50	1,200	150	——
Shunan	20	50	20	——
Shouch'ang	200	1,000	200	——
P'ingyang	1,400	8,400	8,400	——
Lishui	600	4,200	600	——
Ts'ingt'ien	113	678	113	——
Shuich'ang	600	3,000	600	——
TOTAL.....	23,655	201,666	22,451	1,204

POMEGRANATES

The fruit grown in Chekiang is much inferior in quality to the product of Kiangsu. As the output of Chekiang is very small, it is almost entirely consumed locally. The following table shows the output of each producing district in the province:—

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)
Haiyen	40	560	40
Wuhsing	100	600	100
Chinhua	500	2,500	500
Lanch'i	1,000	4,000	1,000
Iwu	90	——	90
K'aihua	52	624	52
Shuich'ang	150	1,800	150
Lishui	480	2,020	480
TOTAL.....	2,412	12,104	2,412

CHERRIES

The cherry is not widely cultivated in Chekiang, being found only in the five districts of Hanghsien, Wuhsing, Shangyü, T'ient'ai and Chinhua. Details of production and consumption are shown in the following table:—

	Annual Output (*Piculs*)	Value (*Dollars*)	Local Consumption (*Piculs*)	Quantity Exported (*Piculs*)
Hanghsien	300	8,000	200	100
Wuhsing	160	3,200	160	—
Shangyü	210	3,360	100	110
T'ient'ai	24	360	24	—
Chinhua	100	1,600	100	—
TOTAL.....	794	16,520	584	210

CHAPTER XII

VEGETABLES

A GREAT variety of vegetables are grown in Chekiang Province, and it is impossible to have a detailed investigation of more than the most important. The following table shows some statistics of the principal vegetables produced in the Province:—

	Cultivated Area (*mou*)	Annual Yield (piculs)	Value	Quantity Consumed within the Producing *hsien* (piculs)	Quantity Consumed Outside the Producing *hsien* (piculs)
Cabbage	808,601	7,075,898	$ 7,077,407	6,945,898	130,000
Bamboo Shoots	1,245,221	5,766,140	22,794,829	3,759,150	2,006,990
Turnips	491,470	5,363,773	5,258,506	5,106,819	256,954
Taro	374,426	3,268,199	8,020,658	3,170,965	97,234
Rape	1,541,000	1,202,780	——	——	——
Chiao Pai (茭白)	47,934	443,654	——	——	——
Arrowhead	32,400	458,650	——	——	——
Colewort	38,490	194,020	——	——	——
Mustard Plant	40,960	495,680	——	——	——

CABBAGE

Two kinds of cabbage are grown in the Province. *ta pai tsai* (大白菜) or "large" cabbage, and *hsiao pai tsai* (小白菜) or "small" cabbage. The total area in the Province devoted to cabbage growing is 808,281 *mou*, and the annual yield 7,075,898 piculs, valued at $7,077,407. Of individual *hsien* Ts'ungteh has the largest cabbage area with 280,000 *mou*, Hsiaoshan and Ch'enghsien coming second with 50,000 *mou* each, and Chenhai third with 49,362 *mou*. Ch'enghsien has the largest annual yield, 2,500,000 piculs, Shaohsing coming next with 500,000 piculs. With the exception of Fenghua and Wenling, where cabbage is shipped to neighboring places, all the other districts consume their own production. Particulars relating to each *hsien* are as follows:—

	Cultivated Area (*mou*)	Yield Per *mou* (piculs)	Total Yield (piculs)	Price Per Picul	Total Value
Hanghsien	20,000	5	100,000	$2.00	$200,000
Haining	12,000	10	120,000	0.40	48,000
Fuyang	10,000	6	60,000	0.50	30,000
Linan	850	10	8,500	1.00	8,500
Yüch'ien	60	10	600	1.00	600
Hsinteng	1,000	10	10,000	1.20	12,000
Ch'anghua	6,250	8	50,000	1,00	50,000
Chiahsing	300	30	9,000	1.00	9,000
Haiyen	1,500	10	15,000	2.00	30,000
Ts'ungteh	280,000	3	84,000	1.00	84,000
Wuhsing	500	2	1,000	1.00	1,000
Ch'anghsing	5,000	10	50,000	1.50	75,000
Teht'sing	4,000	5	20,000	0.60	120,000
Wuk'ang	2,250	51	114,750	0.60	68,850
Anchi	2,000	3	6,000	0.60	3,600
Hsiaofeng	617	3	1,851	0.50	925
Ts'uch'i	1,000	16	16,000	0.50	80,000
Fenghua	6,000	30	180,000	1.00	180,000
Chenhai	49,363	4	197,448	2.00	394,896
Tinghai	200	5	1,000	1.20	6,000
Hsiangshan	4,694	2	9,388	1.00	9,388
Nant'ien	350	8	2,800	1.00	2,800
Shaohsing	25,000	20	500,000	0.30	150,000
Hsiaoshan	50,000	6	300,000	0.40	120,000
Chuchi	2,000	30	60,000	1.00	60,000
Yüyao	600	15	9,000	1.00	9,000
Shangyü	2,000	15	30,000	0.50	15,000
Ch'enghsien	50,000	50	2,500,000	1.00	2,500,000
Hsinch'ang	6,000	40	240,000	1.00	240,000
Linhai	6,000	20	120,000	0.90	108,000
Huangyen	4,000	20	80,000	0.50	40,000
Ninghai	500	20	10,000	1.00	10,000
Wenling	20,820	18	374,760	1.00	374,760
T'ient'ai	690	15	10,350	1.00	10,350
Hsienchü	5,700	10	57,000	3.00	171,000
Chinhua	7,500	10	75,000	1.00	75,000
Lanch'i	4,447	20	88,940	0.70	62,258
Tungyang	5,000	6	30,000	0.70	21,000
Iwu	15,000	4	60,000	0.70	42,000
Yungk'ang	2,000	20	40,000	1.00	40,000
Wui	7,731	13	100,503	1.00	100,503
P'ukiang	10,000	10	100,000	0.50	50,000
T'angch'i	5,212	8	41,696	1.50	625,440
Chühsien	3,620	12	43,440	1.00	43,440
Lungyu	2,000	20	40,000	1.00	40,000
Kiangshan	4,000	4	16,000	0.90	14,400
Ch'angshan	800	30	24,000	0.80	19,200

	Cultivated Area (*mou*)	Yield Per *mou* (piculs)	Total Yield (piculs)	Price Per Picul	Total Value
K'aihua	6,328	4	25,312	1.00	$25,312
Chienteh	2,000	6	12,000	1.00	12,000
Shunan	15,000	4	60,000	0.80	48,000
Tunglu	2,000	10	20,000	1.00	20,000
Fenshui	800	10	8,000	0.80	6,400
Shouch'ang	25,000	4	100,000	1.00	100,000
Fengshui	800	10	8,000	0.80	64,000
Yungchia	500	6	3,000	1.00	3,000
Juian	200	10	2,000	3.00	6,000
Lots'ing	6,500	35	227,500	0.70	159,250
P'ingyang	50,000	7	350,000	0.50	175,000
T'aishun	800	4	3,200	2.00	6,400
Yühuan	250	3	750	1.00	750
Lishui	2,100	2	4,200	2.00	8,400
T'singt'ien	5,000	4	20,000	1.50	30,000
Chinyun	10,000	5	50,000	1.00	50,000
Sungyang	2,000	2	4,000	2.50	10,000
Shuich'ang	830	5	4,150	1.50	6,225
Lungch'uan	1,000	3	3,000	1.00	3,000
Yunho	1,500	40	60,000	1.00	60,000
Hsuanp'ing	1,000	10	10,000	1.50	15,000
Chingning	6,920	3	20,760	1.00	20,760
Total	808,281	—	7,075,898	—	7,077,'07

BAMBOO SHOOTS

Chekiang is one of the chief bamboo-shoot producing provinces in the country. The bamboo area in the Province amounts to 1,245,221 *mou*, the annual yield of bamboo-shoots being 5,766,140 piculs, valued at $22,794,829. Hsiao feng has the largest bamboo area with 290,000 *mou*, Fuyang coming next with 110,000 *mou*, and Ch'anghsing third with 100,000 *mou*. As to total yield, Linhai heads the list with 1,350,000 piculs, Ch'anghsing coming second with 1,000,000 piculs, and Hsiaofeng third with 870,000 piculs.

In addition to the shoots exported to outside markets in their fresh state, a prosperous trade is done in canning shoots. This business is concentrated in Ninghsien, where there are six factories, the Ju Sheng (如 生), Ya Tung (亞 東), Ta Lu (大 陸), Ho Sheng (和 生), Heng Hsin (恆 新), and Shun Sheng (順 生), their annual turnover amounting to tens of thousands of dollars. Particulars concerning bamboo-shoot production in various *hsien* are as follows:—

	Cultivated Area (*mou*)	Yield Per *mou* (piculs)	Total Yield (piculs)	Price Per picul	Total Value	Quantity Consumed within the Producing *Hsien* (piculs)	Quantity Shipped Outside the Producing *Hsien* (piculs)	Principal Markets
Hanghsien	40,000	1	40,000	$5.00	$200,000	30,000	10,000	Hangchow
Haining	8,000	1	8,000	10.00	80,000	8,000	——	——
Fuyang	110,000	2	220,000	12.00	2,640,000	20,000	200,000	——
Linan	20,000	7	14,000	10.00	140,000	2,800	11,200	Hangchow
Yüch'ien	——	—	——	——	——	——	——	——
Hsinteng	300	5	1,500	5.00	7,500	1,000	500	Hangchow, Tunglu
Ch'anghua	2,500	4	10,000	6.60	66,000	10,000	——	——
Chiahsing	——	—	——	——	——	——	——	——
Chiashan	——	—	——	——	——	——	——	——
Haiyen	3,000	.8	2,400	5.00	12,000	2,400	——	——
T'unghsiang	1,200	.4	480	10.00	4,800	480	——	——
Tehts'ing	10,000	2	20,000	16.00	320,000	20,000	——	——
Wuhsing	12,000	10	120,000	6.00	720,000	120,000	100,000	Kiangsu
Ch'anghsing	100,000	10	1,000,000	6.00	6,000,000	500,000	500,000	Shanghai, Huchow
Tehts'ing	645	3.8	2,451	6.00	14,706	2,451	——	——
Wuk'ang	13,200	2.7	35,640	20.00	712,800	12,000	23,640	Shanghai
Anchi	20,000	1	20,000	13.00	260,000	20,000	——	——
Hsiaofeng	290,000	3	870,000	5.00	4,350,000	430,000	440,000	Neighboring districts
Ninghsien	100	2	200	3.00	600	100	100	Shanghai
Ts'uch'i	7,000	2	14,000	35.00	49,000	4,000	10,000	Ninghsien, S'hai etc.
Fenghua	60,000	3	180,000	3.00	540,000	120,000	60,000	Ninghsien, S'hai
Hsiangshan	12,540	4	50,160	4.00	200,640	50,160	——	——

	Cultivated Area (*mou*)	Yield Per *mou* (piculs)	Total Yield (piculs)	Price Per Picul	Total Value	Quantity Consumed Within the Producing *Hsien* (piculs)	Quantity Shipped Outside the Producing *Hsien* (piculs)	Principal Markets
Shaohsing	727	1.6	1,163	$3.00	$3,489	1,163	——	——
Hsiaoshan	600	5	3,000	5.00	15,000	3,000	——	——
Chuch'i	10,000	5	50,000	12.00	600,000	40,000	10,000	Hangchow, S'hai
Yüyao	1,000	2	2,000	4.00	8,000	1,500	500	Ninghsien, Shaohsing
Shangyü	3,000	2	6,000	4.00	24,000	2,000	4,000	Yuyao
Ch'enghsien	50,000	3	150,000	5.00	750,000	100,000	50,000	Ninghsien, S'hai
Hsinch'ang	1,450	3	4,350	5.00	21,750	2,350	2,000	Chenghsien
Linhai	90,000	15	1,350,000	5.00	6,750,000	1,350,000	——	——
Huangyen	60,000	20	1,200,000	10.00	12,000,000	700,000	500,000	Haimen, Shanghai
Ninghai	2,000	2	4,000	3.00	12,000	2,000	2,000	Neighboring districts
T'ient'ai	500	.12	60	15.00	900	60	——	——
Hsienchü	9,500	.5	4,750	10.00	47,500	4,750	——	——
Chinhua	1,525	1.2	12,630	3.00	37,890	12,630	——	——
Lanch'i	2,500	2	5,000	8.00	40,000	5,000	——	——
Tungyang	2,000	3	6,000	4.00	24,000	6,000	——	——
Yungk'ang	1,500	.9	1,350	5.00	6,750	1,150	200	Tungyang
P'ukiang	5,000	1	5,000	4.00	20,000	3,000	2,000	Iwu
T'angch'i	782	3	2,346	5.00	11,730	2,000	346	Hsingteng, Fuyang
Chühsien	14,725	5	73,760	8.00	590,000	38,456	35,304	Hangchow, S'hai
Lungyu	5,000	5	25,000	8.00	200,000	4,000	21,000	S'hai, Hangchow
Kiangshan	200	4	800	10.00	8,000	300	500	Chuhsien Lanchi
Ch'angshan	600	7	4,200	5.00	21,000	4,200	——	——

	Cultivated Area (*mou*)	Yield Per *mou* (piculs)	Total Yield (piculs)	Price Per Picul	Total Value	Quantity Consumed Within the Producing *Hsien* (piculs)	Quantity Shipped Outside the Producing *Hsien* (piculs)	Principal Markets
K'aihua	3,500	2	7,003	$1.00	$70,000	7,000	——	——
Chienteh	500	2	1,000	6.00	6,000	1,000	——	——
Shunan	5,000	2	10,000	4.00	40,000	10,000	——	——
T'unglu	500	5	2,500	5.00	12,500	1,000	1,500	H'chow, Shaohsing
Shuian	500	2	1,000	10.00	10,000	——	——	——
Shouch'ang	18,000	5	90,000	9.00	810,000	90,000	——	——
Fenshui	200	5	1,000	3.00	3,000	1,000	——	——
Yungchia	800	2.5	2,000	4.00	8,000	2,000	——	——
P'ingyang	8,000	1	8,000	20.00	160,000	6,000	2,000	Shanghai
T'aishun	1,000	8	800	3.00	2,400	800	——	——
Lishui	300	5	1,500	8.00	12,000	1,500	——	——
Chinyun	4,000	2	8,000	3.00	24,080	7,800	200	Kinhua, Yungkang, Lanchi
Shuich'ang	2,500	20	50,000	2.00	100,000	30,000	20,000	Soochow, Hangchow, Sungyang
Lungch'uan	22,000	.15	3,300	2.00	6,600	3,300	——	——
Yunho	2,000	2.5	11,000	——	——	11,000	——	——
Hsuanp'ing	2,000	10	20,000	3.00	60,000	20,000	——	——
Chingning	24,000	1.2	28,800	12.00	77,600	28,800	——	——
Total	1,245,221	—	5,766,140	——	$2,794,829	3,759,150	2,006,990	——

TURNIPS

The area devoted to turnips in Chekiang Province amounts to 491,470 *mou*, with an annual yield of 5,363,773 piculs, valued at $5,258,506. Lanch'i has the largest area, with 99,538 *mou*, Ts'ungteh being second with 28,000 *mou*, and Hsiaoshan third with 25,000 *mou*. Lanch'i also heads the list in total yield, producing 995,380 piculs, Linhai coming second with 420,000 piculs, and Wuhsing third with 400,000 piculs. With the exception of Fenghua and Chü-hsien, where a small quantity is exported to neighboring districts, the entire yield of other districts is consumed locally. Particulars for each *hsien* are as follows:—

	Cultivated Area (*mou*)	Yield Per *Mou* (piculs)	Total Yield (piculs)	Price Per Picul	Total Value
Hanghsien	1,500	8	12,000	$3.00	$36,000
Haining	10,000	5	50,000	0.80	40,000
Fuyang	5,000	2.5	12,500	0.50	6,250
Linan	2,000	8.5	17,000	1.50	25,500
Yüch'ien	3,000	6	18,000	1.00	18,000
Hsinteng	400	3	1,200	1.20	1,440
Ch'anghua	3,000	6	18,000	1.00	18,000
Chiahsing	300	30	9,000	1.00	9,000
Chiashan	300	10	3,000	1.30	3,900
Haiyen	1,000	10	10,000	0.70	7,000
Ts'ungteh	28,000	1.2	33,600	0.50	16,700
T'unghsiang	5,000	3	15,000	0.70	10,550
Wuhsing	20,000	20	400,000	0.70	280,000
Tehts'ing	500	3	1,500	0.80	1,200
Wuk'ang	256	8	2,048	4.00	8,192
Anchi	1,200	3	3,600	1.00	3,600
Hsiaofeng	266	1.2	4,392	0.80	3,514
Ts'uch'i	2,000	15	30,000	1.00	30 000
Fenghua	7,000	25	175,000	1.50	262,500
Chenhai	2,632	5	13,160	2.00	26,320
Tinghai	150	6	900	1.00	900
Hsiangshan	1,256	2	2,512	1.00	2,512
Nant'ien	240	10	2,400	0.80	1,820
Shaohsing	12,500	5	62,500	1.00	62,500
Hsiaoshan	25,000	15	375,000	0.50	187,500
Chuchi	5,000	25	125,000	0.60	75,000
Yüyao	800	13	10,400	1.00	10,400
Shangyü	1,500	1.2	1,800	2.00	3,600
Ch'enghsien	10,000	10	100,000	1.00	100,000

	Cultivated Area (*mou*)	Yield Per *Mou* (piculs)	Total Yield (piculs)	Price Per Picul	Total Value
Hsinch'ang	2,600	25	65,000	$1.00	$65,000
Linhai	21,000	20	420,000	1.10	462,000
Huangyen	14,000	20	280,000	0.70	196,000
Ninghai	1,000	40	40,000	0.50	20,000
Wenling	20,480	15	307,200	0.80	245,760
T'ient'ai	2,260	8	18,080	0.50	9,040
Hsienchü	11,500	15	172,500	1.50	258,750
Chinhua	16,120	5	80,600	1.00	80,600
Lanch'i	99,538	10	995,380	0.15	1,493,070
Tungyang	20,000	10	200,000	0.30	60,000
Iwu	30,000	4.5	135,000	0.70	94,500
Yungk'ang	3,500	20	70,000	0.80	56,000
Wui	14,000	5	70,000	0.80	56,000
P'ukiang	20,000	8	160,000	0.80	128,000
T'angch'i	5,842	7.5	43,815	1.00	43,815
Chühsien	8,678	16	95,848	1.00	95,848
Lungyu	10,000	4	40,000	0.40	16,000
Kiangshan	3,000	4	12,000	0.90	10,800
Ch'angshan	560	40	22,400	0.80	17,920
K'aihua	3,182	4	12,728	1.00	12,728
Chienteh	2,000	2	4,000	1.00	4,000
Shunan	15,000	3	45,000	0.90	40,500
T'unglu	10,000	3	3,000	1.00	3,000
Shuian	5,000	3	15,000	1.00	15,000
Shouch'ang	5,000	35	17,500	1.00	17,500
Fenshui	1,000	8	8,000	0.70	5,600
Yungchia	300	4	1,200	0.80	960
Juian	500	10	5,000	0.40	20,000
Lots'ing	3,200	28	89,600	0.50	44,800
P'ingyang	2,000	3	6,000	0.60	36,000
T'aishun	600	4	2,400	0.11	2,640
Yühuan	200	15	3,000	0.60	1,800
Lishui	510	2	1,020	2.00	2,040
T'singt'ien	20,000	10	200,000	1.00	200,000
Chinyun	20,000	7	140,000	0.80	112,000
Sungyang	6,000	2	12,000	1.50	18,000
Shuich'ang	3,200	10	32,000	1.00	32,000
Lungch'uan	500	2.7	1,350	0.90	1,215
Yunho	800	16	12,800	1.00	12,800
Hsuanp'ing	1,500	10	15,000	1.00	15,000
Total	491,470	—	5,363,773	——	$5,258,506

TARO

Three kinds of taro are grown in Chekiang Province, the *hung ting yu* (紅頂芋), or "red tip" taro, *pai yu* (白芋), or "white" taro, and *ta t'ou yu* (大頭芋), or "big head" taro. The first leads in quality, while the last is least grown. According to recent investigation, the taro area in the Province amounts to 374,426 *mou*, with an annual yield of 3,268,199 piculs, valued at $8,020,658. Tehts'ing has the largest area, 45,000 *mou*, Wuhsing coming second, with 36,853 *mou*, and Wuk'ang third with 34,118 *mou*. Tehts'ing also leads in total production, yielding 810,000 piculs, with Ninghsien second, 360,000 piculs, and Chühsien third, 268,305 piculs. With the exception of Fenghua, Chenhai, Linhai, Shangyü, Huangyen and Wenling, where part of the crop is shipped to neighboring districts, the yields in all other *hsien* are barely sufficient to meet the demand for local consumption. Particulars for each *hsien* are shown below:—

	Cultivated Area (*mou*)	Yield Per *Mou* (piculs)	Total Yield (piculs)	Price Per Picul	Total Value
Hanghsien	1,000	5	5,000	$3.00	$15,000
Haining	8,000	10	80,000	2.00	160,000
Fuyang	1,500	3	4,500	2.00	9,000
Linan	5,000	2.5	12,500	2.00	25,000
Yüch'ien	2,000	3	6,000	2.00	12,000
Hsinteng	4,000	3	12,000	2.00	24,000
Chiashan	1,000	10	10,000	3.00	30,000
Haiyen	1,500	8	12,000	1.00	12,000
Ts'ungteh	1,800	6	1,080	6.00	6,480
T'unghsiang	1,000	3	3,000	4.00	12,000
Wuhsing	36,853	4	147,412	3.00	442,236
Ch'anghsing	13,000	4	52,000	3.00	156,000
Tehts'ing	45,000	18	810,000	3.00	2,430,000
Wuk'ang	34,118	5	170,590	6.00	1,023,440
Anchi	150	2	300	4.00	1,200
Hsiaofeng	180	12	2,160	4.00	8,640
Ninghsien	20,000	18	360,000	2.00	720,000
Fenghua	9,000	8	72,000	2.00	144,000
Chenhai	23,439	4	93,756	4.00	937,564
Hsiangshan	2,724	4	10,896	3.00	32,688
Shaohsing	1,200	4	4,800	3.00	14,400
Hsiaoshan	10,000	7	70,000	2.00	140,000
Chuchi	600	5	3,000	2.00	6,000

	Cultivated Area (*mou*)	Yield Per *Mou* (piculs)	Total Yield (piculs)	Price Per Picul	Total Value
Shangyü	100	15	1,500	$3.00	$4,500
Ch'enghsien	2,000	10	20,000	——	——
Hsinch'ang	500	8	4,000	——	——
Linhai	9,000	15	135,000	2.00	270,000
Huangyen	6,000	20	120,000	3.00	360,000
Ninghai	200	6	1,200	1.00	1,200
Wenling	16,875	2	33,750	3.00	101,250
T'ient'ai	3,500	10	35,000	3.00	105,000
Hsienchü	8,600	3	103,200	2.00	206,400
Lanch'i	18,000	7	126,000	1.00	126,000
Tungyang	8,000	10	80,000	3.00	240,000
Iwu	15,000	4	60,000	——	——
Wui	12,000	6	72,000	1.00	72,000
P'ukiang	2,000	1.6	3,200	2.00	6,400
T'angch'i	450	10	4,500	2.00	9,000
Chühsien	17,887	15	268,305	1.00	268,305
Lungyu	1,000	2	2,000	3.00	4,000
Kiangshan	5,000	8	40,000	2.00	80,000
Ch'angshan	2,500	15	37,500	3.00	82,500
Chicnteh	2,000	4	8,000	4.00	32,000
Shouch'ang	700	4	2,800	3.00	8,400
Fenshui	200	3	600	——	——
Yungchia	1,500	8	12,000	1.00	12,000
Lots'ing	250	7	1,750	1.00	1,750
P'ingyang	2,000	9	1,800	5.00	9,000
Lishui	150	3	450	3.00	1,350
T'singt'ien	10,000	10	100,000	1.50	150,000
Chinyun	3,000	8	24,000	2.00	48,000
Shuich'ang	750	5	3,750	2.00	7,500
Lungch'uan	200	2	400	——	——
Yunho	500	15	7,500	——	——
Hsuanp'ing	1,500	10	15,000	1.00	15,000
Total	374,426	—	3,268,199	——	$8,020,658

OTHER VARIETIES

Other vegetables of importance grown in the Province consist of rape, *chiao pai* (茭白), arrowhead, colewort, and mustard plant. The total area for rape is 1,541,000 *mou*, with an annual yield of 1,202,780 piculs, *chiao pai*, 47,934 *mou* with 443,654 piculs, arrowhead, 32,400 *mou* with 456,650 piculs, colewort, 38,490 *mou*, with 194,020 piculs, and mustard plant, 40,960 *mou* with 495,680 piculs. Detailed figures are as follows:—

	Rape		*Chiao Pai*		Arrowhead		Colewort		Mustard Plant	
	Area (*mou*)	Yield (piculs)	Area (*mou*)	Yield (piculs)	Area (*mou*)	Yield (piculs)	Area (*mou*)	Yield (piculs)	Area (*mou*)	Yield (piculs)
Hanghsien .	109,000	93,360	—	—	—	—	—	—	—	—
Fuyang	33,000	29,970	1,000	1,000	—	—	—	—	—	—
Yühang ...	23,000	32,170	—	—	—	—	—	—	—	—
Linan	9,000	9,350	—	—	—	—	—	—	—	—
Yüch'ien	7,000	10,820	—	—	—	—	—	—	—	—
Hsinteng ...	24,000	23,500	—	—	—	—	—	—	—	—
Chiashan ...	—	—	—	—	500	1,000	—	—	—	—
Haiyen	—	—	200	3,000	200	2,000	—	—	—	—
Ts'ungteh ...	6,000	2,890	1,000	240	—	—	24,000	12,000	16,000	9,600
T'unghsiang .	—	—	—	—	500	750	—	—	—	—
Wuhsing ...	—	—	500	500	—	—	—	—	—	—
Ch'anghsing .	13,000	10,610	—	—	—	—	—	—	—	—
Tehts'ing ..	82,000	39,500	320	1,440	—	—	—	—	—	—
Wuk'ang ...	16,000	15,420	—	—	—	—	—	—	—	—
Anchi	—	—	50	100	—	—	—	—	—	—
Hsiaofeng ..	—	—	235	470	—	—	—	—	—	—
Ninghsien .	441,000	264,450	1,000	15,000	—	—	—	—	—	—
Ts'uch'i	128,000	89,510	—	—	—	—	—	—	—	—

	Rape		*Chiao t'ai*		Arrowhead		Colewort		Mustard Plant	
	Area (*mou*)	Yield (piculs)	Area (*mou*)	Yield (piculs)	Area (*mou*)	Yield (piculs)	Area (*mou*)	Yield (piculs)	Area (*mou*)	Yield (piculs)
Fenghua ...	—	—	400	2,400	—	—	—	—	—	—
Hsiangshan .	—	—	136	544	—	—	80	640	—	—
Nant'ien ...	—	—	—	—	—	—	—	—	160	1,280
Shaohsing ..	100,000	97,570	300	360	1,100	4,400	—	—	—	—
Hsiaoshan ..	110,000	100,850	350	3,850	100	500	—	—	—	—
Chuchi	—	—	—	—	—	—	2,000	60,000	—	—
Yüyao	110,000	89,690	200	600	—	—	—	—	—	—
Ch'enghsien .	—	—	100	—	—	—	—	—	—	—
Hsinch'ang ..	—	—	120	720	—	—	—	—	—	—
Linhai	—	—	6,000	120,000	30,000	450,000	—	—	—	—
Huangyen ..	9,000	7,768	4,000	60,000	—	—	—	—	20,000	400,000
Ninghai	—	—	—	—	—	—	—	—	—	—
Wenling ...	—	—	—	—	—	—	6,410	25,380	4,800	84,800
T'ient'ai	—	—	75	59,000	—	—	—	—	—	—
Lanch'i	—	—	400	1,600	—	—	—	—	—	—
Tungyang ..	19,000	11,390	—	—	—	—	—	—	—	—
Yungk'ang ..	33,000	19,650	—	—	—	—	—	—	—	—

	Rape		*Chiao Pai*		Arrowhead		Colewort		Mustard Plant	
	Area (*mou*)	Yield (piculs)	Area (*mou*)	Yield (piculs)	Area (*mou*)	Yield (piculs)	Area (*mou*)	Yield (piculs)	Area (*mou*)	Yield (piculs)
Wui	61,000	36,680	—	—	—	—	6,000	6,000	—	—
Chühsien ...	—	—	200	600	—	—	—	—	—	—
Ch'angshan	16,000	15,800	40	320	—	—	—	—	—	—
K'aihua	74,000	74,430	—	—	—	—	—	—	—	—
Shunan	6,000	6,380	—	—	—	—	—	—	—	—
Shuian	16,000	15,720	—	—	—	—	—	—	—	—
Fenshui	5,000	5,370	—	—	—	—	—	—	—	—
Yungchia ..	—	—	80	240	—	—	—	—	—	—
Juian	37,000	36,330	—	—	—	—	—	—	—	—
Lots'ing	44,000	45,690	—	—	—	—	—	—	—	—
P'ingyang ..	—	—	10,000	50,000	—	—	—	—	—	—
Yühuan	6,000	5,220	300	600	—	—	—	—	—	—
Lishui	2,000	11,310	428	1,070	—	—	—	—	—	—
Ts'ingt'ien ..	—	—	20,000	100,000	—	—	—	—	—	—
Yunho	1,000	660	500	2,000	—	—	—	—	—	—
Chingning ..	1,000	730	—	—	—	—	—	—	—	—
Total ...	1,541,000	1,202,780	47,934	443,654	32,400	458,650	38,490	194,020	40,960	495,680

CHAPTER XIII

TOBACCO

THOUGH Chekiang is not famous as a tobacco-growing center, yet over 100,000 piculs of leaf are produced annually in the Province. The leaf is inferior to the Hsüchow (許州, Honan) and Ts'ingchow (青州, Shantung) products, and only when the cigar-making industry developed in Shanghai, were regular shipments made to that city to meet the requirements of the factories.

Tobacco is cultivated in rotation with other crops. The seed, dried in the wind after the previous harvest, is first mixed with mud, sand, or grass ash before being scattered evenly over the prepared bed, and covered with a thin layer of chicken droppings or fine mould. In the early spring, when the seedlings are a few inches high, they are transplanted, and two or three months later picking is begun. Leaves near the bottom of the stem are first picked, and known as *hsia chiao yeh* (下脚葉), and after three or five days leaves near the middle of the stem are picked, and are known as *er p'i yeh* (二批葉). Leaves near the upper part of the stem, known as *chung p'an yeh* (中盤葉), are picked five or six days after *er p'i yeh*. Leaves are hung out between two bamboo screens and dried in the sun, each side being exposed for about three days, after which they are tied up first in small and then in large bundles ready for the market.

Five kinds of tobacco are grown in Chekiang Province, *ta kan lang* (大幹榔), which leads in quality, *hsiao kan lang* (小幹榔), *p'i p'a tsung* (枇杷種), the shape of which resembles loquat leaves, *hsi kan wu* (細幹梧), and *tung lu tsung* (東路種). The total area under tobacco in the Province is estimated at 180,253 *mou*, with an annual output of 173,120 piculs, detailed figures being as follows:—

Districts Formerly Under the Jurisdiction of		Area (*mou*)	Yield (piculs)	Average Price Per Picul	Total Value
Shaohsing Prefecture	(紹興府)	65,930	60,000	$14.60	$870,000
Chiahsing "	(嘉興府)	53,846	49,000	20.00	580,000
Ch'uchow "	(處州府)	27,692	25,200	30.00	756,000
Huchow "	(湖州府)	15,385	14,000	20.00	280,000
Chinhua, Chüchow & Yenchow Prefecture	(金衢嚴)	15,385	14,000	12.50	175,000
T'aichow "	(台州府)	6,145	5,600	15.00	84,000
Wenchow "	(溫州府)	3,100	2,800	12.50	35,000
Hangchow "	(杭州府)	2,308	2,100	13.50	28,350
Ningpo "	(寧波府)	463	420	10.00	4,200
TOTAL.....		190,253	173,120	——	2,812,550

Chekiang leaf is packed either in bamboo crates or sacks. The crates are of three sizes, holding 180, 140, and 100 catties. Sacks are either made of grass or rush. Generally tobacco from Shaohsing and Ch'ühsien is packed in grass sacks, while in Chiahsing rush sacks are used. The sacks used are two sizes, containing 180 or 100 catties.

Hangchow is the chief market for tobacco produced in Chekiang Province. Over 60 per cent of the leaf is consumed locally for making *han yen* (旱煙), or "dried tobacco," which is smoked in long bamboo pipes. Most of the remaining 40 per cent is shipped to Shanghai for making low-grade cigars and cigarettes, and is sometimes mixed with Manila leaf for making middle-grade cigars.

CHAPTER XIV

FORESTATION

ACCORDING to statistics compiled by the Bureau of Military Survey (陸軍測量局) the area of hilly land in Chekiang Province amounts to 110,235,581 *mou* of which one-third is wooded. Since the afforestation movement was started by the Central Government both provincial and local authorities have established forest experimental stations and nurseries, and even individuals have undertaken the reclamation of waste land for forestry enterprises. In Chekiang trees with needle-like leaves are most common, and some tropical trees are found at places bordering Fukien province, where climatic conditions are suitable.

The climate in Chekiang is temperate, and provides good conditions for the cultivation of timber. Among the trees growing in Chekiang forests the most common are pine, sweet gum, fir, goldenrain, camphor, elm, zelkova and bamboo, followed by maidenhair, parasol, privet, tallow and tea plant. In addition to these *mao chu* (毛竹), a kind of large bamboo, is found in Hangchow, Wuhsing, and Lungyu. Most of the forests are in the south-western part of the Province, including Lungch'uan and Ch'ingyuan. In these two places fir is the most common trees, with pine coming next. Some of these forests are private-owned and the trees are cut down when between 30 and 60 years old. In various districts forests of horse-tail pine are frequently found, mostly private-owned, with a few public property. These trees are felled at the age of 15 or 16 years. The by-products of forestry are numerous, and if methods of manufacture were improved the industry could be greatly developed.

FORESTS AND TOPOGRAPHY

The most important wooded areas can be grouped in four sections, as follows:—

1. First section: Hanghsien, Haining, Fuyang, Yühang, Linan, Yüch'ien, Hsinteng, Ch'anghua, Chiahsing,

Chiashan, Haiyen, Ts'ungteh, P'inghu, Wuhsing, Ch'anghsing, Tehts'ing, Wuk'ang, Anchi, and Hsiaofeng;

2. Second section: Chühsien, Lungyu, Kiangshan, Ch'angshan, K'aihua, Chinhua, Lanch'i, Tungyang, Iwu, Yungk'ang, Wui, P'ukiang, T'angch'i, Chienteh, Shunan, T'unglu, Shuian, Shouch'ang, and Fenshui;

3. Third section: Yungchia, Lishui, Ts'ingt'ien, Chinyun, Sungyang, Shuichang, Lungch'uan, Ch'ingyuan Yunho, Hsuanp'ing, Chingning, Juian, Lots'ing, P'ingyang, T'aishun, and Yühuan;

4. Fourth section: Ningpo, Ts'uch'i, Fenghua, Chennai, Nant'ien, Tinghai, Shaohsing, Hsiaoshan, Chuchi, Yüyao, Shangyü, Ch'enghsien, Hsinch'ang, Linhai, Huangyen, T'ient'ai, Hsienchü, Ninghai and Wenling.

Of the area of 36,000 square miles, only 5,000 square miles are plains. Of the mountain ranges the largest is the T'ien Mu (天目), in the first forest district. This range has two main peaks, the Tung T'ien Mu (東天目) of Linan, and Hsi T'ien Mu (西天目) of Yüch'ien, and on each there is a pool, known as T'ien Mu or "sky eye." These two peaks are 20 *li* apart, and the Tung T'ien Mu, 5,000 feet above sea-level, is the highest point in the Province. The Shaoch'i (苕溪) and Chientang form the two most important waterways in Chekiang. The Shaochi, starting from T'ien Mu Shan (天目山), has two sources, that on the south side of the mountain and reaching Wuhsing via Linan, Yühang and Tehts'ing being known as *tung pai* (東派), while the other, known as *hsi pai* (西派), starts from the north side of the mountain, reaching Wuhsing via Hsiaofeng, Anchi and Ch'anghsing. These two branches of the Shaoch'i River flow into Taihu Lake. The task of the First Provincial Forest Station is to afforest the ranges of the T'ien Mu Shan in order to prevent flooding from the Shaoch'i River.

In the Second Forest District there are more mountains than plains. The northern range, Hsienhsialing (仙霞嶺), runs from Kiangshan northward to Yüch'ien via Shuian and Shunan. The Chientang River is the largest stream in the Second Forest District, and has two

branches, the northern and southern. The former, known as Hui Kiang (徽 江), starts in Huangshan (黃 山), Anhui province, and after passing Hsiuning (休 寧), enters Chekiang Province, and thence flows to Shunan (淳安), and Chienteh where it meets the water of south origin.

The southern origin is also divides into two sections, the Chü Kiang (衢 江) or Hsinan Kiang (信 安 江), and Chinhua Kiang (金 華 江). The Chü Kiang rises at K'aihua (開 化), and after passing Chühsien and Wench'i (文 溪) reaches Lanch'i where it joins the Chinhua Kiang.

The Chinhua Kiang rises from Tapan Shan (大 盆 山), and after passing Iwu and Chinhua reaches Lanch'i and meets the Chü Kang (衢 港). The two streams after joining are known as the Lanch'i (蘭 谿) River, which flows northward to Chienteh where it meets the Wu (婺), Chü (衢) and Hui (徽) rivers and then flows eastward to T'unglu (桐 廬), and is known as the T'ung Kiang (桐 江). The Fenshui Kang (分 水 港), Tunglu, rises from the T'ien Mu Shan (天 目 山) and flows to Hangchow, being known as the Chientang River. The aim of the Second Provincial forest station is to aforest the northern ranges of the Hsienhsialing in order to prevent flooding from the Chien Tang River.

In the Third Forest District the hilly lands outnumber the plains. The southern range of the Hsienhsialing extending eastward from Kiangshan is known as Kuatsang Shan (括 倉 山); and on extending northeast is known as Pei Yentang Shang (北 雁 蕩 山), which stands to the northeast of Lots'ing. While the Nan Yentang Shan (南 雁 蕩 山) lies at south-west of P'ingyang. Among the rivers the Ou Kiang (甌 江) is the largest, its upper reaches being called the Tach'i (大 溪) which flows westward from Lungch'uan to Lishui. The Haoch'i (好 溪) flows from Chinyun to T'singt'ien, and empties itself to the sea. On the upper reaches of the Ou Kiang timber-lands are found, and the aim of the Third Provincial Forest Station is to afforest the Kuatsang and Yentang ranges in order to prevent flooding from the Ou Kiang and other streams.

In the Fourth Forest District the highest mountain is T'ient'ai Shan (天台山), 3,000 feet above sea-level, and extending northward this range is called Ssuming Shan (四明山). In Yüyao, Shanyü, Ningpo, and Fenghua the most famous mountain ranges are Tahsueh (大雪) and Hsuehtou (雪竇) which to the westward becomes known as Kuich'i Shan (會稽山). The important waterways in this district are Ts'ao-ê Kiang (曹娥江), Yung Kiang (甬江) and Chiao Kiang (椒江). The upper stream of the Tsao-ê Kiang is known as Yen Ch'i (剡溪) which rises at Ch'enghsien and flows northward, passing Shangyü and Shaohsing and joining the Chientang River. The Yung Kiang is also known as Ning Kiang (鄞江), flowing from Ssuming Shan (四明山) and meeting the Fenghua Kiang (奉化江) and Yao Kiang (姚江) in Ningpo. The aim of the Fourth Provincial Forest Station is to convert various mountain ranges into forests in order to prevent flooding from various rivers in the district.

FORESTS

The distribution of forest land varies with climatic conditions, and trees which flourish in one locality may be difficult to grow in other places owing to differences in climate and soil. While statistics as to the number of trees in the four sections are not available, the following list shows the trees which are most commonly found in the second section:

Mokey pine
Peacock pine
Arbor-vitae
Horsetail pine
Camphor tree
Querous glauca, Thunb.
Dalbergia
Zelkova
Privet tree
Tung oil tree
Tallow tree
Lacquer tree
Sweet gum
Common chestnut
Paulownia
Maidenhair tree
Melia japonia, Don.

The following is a list of trees grown in the Second Forestion Station, numbering 132 kinds, with their place of origin given:

	Where found
Horsetail pine	Chienteh
Black pine	Tsingtao
Cunninghamia sinensis, R. Br.	Chienteh
Cryptomeria japonica, Don.	"
Pinus tabulaeformis, Carriere	Liaoning
Arbor-vitae	Chienteh
Juniperus chinensis, L.	"
Podocarpus chinensis, Wall.	"
Podocarpus Nagaeia, R. Br.	P'ingyang
Torreya nucifera, S. et Z.	Chienteh
Maidenhair tree	"
Hackberry	"
Zelkova	"
Lacebark elm	"
Hemiptelia	"
Catalpa Kaempferi, S. et Z.	"
Christmasberry	"
Cherry tree	"
Apple tree	Peiping
Prunus Mume, S. et Z.	Chienteh
Pirus betulaefolia, Bge.	"
Peach tree	Peiping
Loquat tree	Chienteh
Hibiscus syriacus, L.	"
Hibiscus mutabilis, L.	"
Eurya japonica, Thunb.	"
Thea plant	"
Orange tree	"
Pomelo tree	"
Pistach tree	"
Rhus vernicifera, DC	"
Nutgall tree	"
Raisin tree	"
Date tree	"
Rhamnus crenata, S. et Z.	"
Ligustrum Ibota, Sieb.	Lanch'i
Chinese ash	"
Privet tree	Chienteh
Euonymus alata, K. Koch.	"
Euonymus japonica, Thunb.	"
Boxwood	"
Populus alba, L.	Hangchow
Willow tree	Chienteh
Pagoda tree	"
Chinese wisteria	Hangchow
Cercis chinensis, Bge.	Chienteh
Gleditschia japonica, Miq.	"
Kentucky coffee tree	"

	Where found
Pink serris	Chienteh
Dalbergia	"
Black locust	Hangchow
Lespedeza bicolor, Turez.	Chienteh
Castanopsis schlerophylla, Sch.	"
Henry's chestnut	"
Common chestnut	"
Quercus serrata, Thunb.	Hangchow
Quercus glauca, Thunb.	Chienteh
Quercus glandulifera, Bl.	"
Machilus Nanmu, Hemsl.	Hangchow
Camphor tree	Chienteh
Gardenia florida, L.	"
Rhododendron indicum, Sw. var. *macranthum*, Maxim.	Lanch'i
Melia japonica, Don.	"
Cedrela chinensis, Juss.	"
Elaeagnus pungens, Thunb.	Chienteh
Diospyros Kaki, L.F.	"
Wild persimmon tree	Shantung
Sweet gum	Chienteh
Platanus orientalis, L.	Hangchow
Chinese ash	Chienteh
Platycarya	"
Hickory nut tree	Yuch'ien
Styrax japonica, S. et Z.	Chienteh
Sapindus mukurosi, Gaertn.	"
Goldenrain tree	"
Mulberry tree	"
Broussonetia papyrifeta, Vent.	"
Calycanthus praecox, L.	"
Trifid maple	"
Tungoil tree	"
Tallow tree	"
Bischoffia javanica	Nanking
Parasol tree	Chienteh
Ailanthus glandulosa, Desf.	"
Myrica rubra, S. et Z.	"
Nandina domestica, Thunb.	"
Trachycarpus excelsa, Wendl.	"
Alnus japonica, S. et Z.	Tsingtao
Ilex latifolia, Thunb.	Chienteh
Evergreen holly	"
Nerium odorum, Soland.	"
Phyllostachys quilioi, Riv.	"
Bambusa nana, Roxb., var. *gracilima*, Krz.	"
Arundinaria japonica, S. et Z.	"
Phyllostachys sulphurea, Riv.	"

FOREST STATIONS

Forest stations in Chekiang are classified as provincial, local, Chungshan (中山) and private. The provincial forest station are established under the Reconstruction Department of the Provincial Government, and there are four such stations operating in Chekiang. The first, with its central organization at West Lake, has two sub-stations, one at Tung Tienmu Shan (東天目山) and the other at Mokanshan (莫干山). The purpose of these stations is to preserve and develop the scenic beauty of the spot. The Second Forest Station is established at Ch'angshan with one sub-station at Chienteh and another at Chinhua (or Chühsien). The Third Provincial Forest Station is at Lishui with a branch at Lungch'uan or Chinyun. The fourth Forest Station is at T'ient'ai with one branch at Chaoêkiang and another at Hsienchü or Hsinch'ang. The following table shows particulars of the forests in Chekiang:

Forest Stations	Location	Forest Area (*mou*) 1929	1930
First Provincial West Lake Central Station	Hangchow	6,431	13,150
„ „ Tung Tienmu sub-station	Linan	2,000	7,998
„ „ Mokanshan sub-station	Wukiang	——	7,998
Second Provincial Central Station	Ch'angshan	9,685	14,244
„ „ Chienteh sub-station	Chienteh	1,204	7,002
„ „ Chühsien or Chinhua sub-station .	Chühsien or Chinghua	——	7,998
Third „ Central Station	Lishui	17,000	24,576
„ „ Lungch'uan Sub-station	Lungch'uan	——	7,998
Fourth „ Central Station	T'ient'ai	7,785	14,062
„ „ Tsaoê Kiang sub-station	Shangyü	2,200	7,998
„ „ Hsienchü sub-station	Hsienchü	——	7,998

LOCAL NURSERIES

Local nurseries operating in various districts of the Province number 75, as shown in the following list:

Nurseries	*Mou*	Date of Establishment
Hangchow	507.6	Feb. 6, 1930
Haining	1,000	Nov. 16, 1928
Fuyang	10	Dec. 11, 1928
Yühang	25	Dec. 1928
Linan	40	Jan., 1926
Yüch'ien	15	Mar. 1, 1929
Hsinteng	—	—
Ch'anghua	10	July, 1930
Chiahsing	8.3	Apr., 1928
Chiashan	9	Mar. 1, 1929
Haiyen	10	Mar., 1928
Ts'ungteh	30	July, 1929
P'inghu	13	Oct. 1, 1928
T'unghsiang	23	Mar., 1929
Wuhsing	10	July, 1928
Ch'anghsing	16	July, 1928
Tehts'ing	15	Jan. 1929
Wuk'ang	20	July, 1928
Anchi	8	Nov. 1, 1928
Hsiaofeng	20	Mar., 1929
Ningpo	10	Dec. 1928
Ts'uch'i	30	Apr., 1928
Fenghua	7	May 1, 1928
Chenhai	12	July, 1928
Tinghai	10	July, 1928
Hsiangshan	6	Feb., 1929
Nant'ien	4	July 1928
Shaohsing	20	Feb. 1929
Hsiaoshan	120	July 1. 1928
Chuchi	6	July 1, 1929
Yüyao	10	Oct. 1928
Shangyü	10	Jan. 1929
Ch'enghsien	10	Mar., 1929
Hsinch'ang	10	Apr. 1, 1930
Linhai	10	Mar., 1929
Huangyen	10	Nov. 1928
Ninghai	—	—
Wenling	10	July, 1928
T'ient'ai	3	Feb. 10, 1929
Hsienchü	15	Oct. 1929
Chinhua	40	July, 1930
Lanch'i	190	Apr., 1929
Tungyang	10	July, 1928

Nurseries	*Mou*	Date of Establishment
Iwu	15	Aug. 1928
Yungk'ang	10	July, 1928
Wui	10	Mar. 1929
P'ukiang	20	July, 1928
T'angch'i	12	May 1, 1929
Chühsien	48	1916
Lungyu	11	July, 1928
Kiangshan	11	July, 1928
Ch'angshan	18	Oct. 15, 1928
K'aihua	18	July, 1928
Chienteh	11	Aug. 1928
Shunan	16	Dec. 1928
T'unglu	30	Aug. 1928
Shuian	10	Mar., 1929
Shouch'ang	10	Aug. 1928
Fenshui	13	Apr., 1928
Yungchia	20	Mar. 23, 1929
Juian	—	—
Lots'ing	10	Jan. 1929
P'ingyang	27	Dec. 1928
T'aishun	10	Mar. 1929
Yühuan	8	Mar. 25, 1929
Lishui	10	July, 1928
T'singt'ien	10	Oct. 14, 1928
Chinyun	10	July, 1928
Sungyang	14	Apr. 1928
Shuich'ang	10	July, 1928
Lungch'uan	12	Dec. 1928
Ch'ingyuan	8	Mar., 1929
Yunho	12	Nov. 1928
Hsuanp'ing	6	Mar. 1928
Chingning	5	Jan. 1930

CHUNGSHAN NURSERIES

The Chungshan nurseries were established in memory of Dr. Sun Yat-sen, who died on March 12, 1925. The following is a list of the 79 nurseries of this description now operating in Chekiang, with particulars:—

	Hilly Lands (*mou*)			Afforested Area (*mou*)		
	1928	1929	1930	1928	1929	1930
Provincial Afforestation Movement	106	100	80	106	100	80
Hanghsien	—	10	10	—	10	10
Haining	11	5	4	11	5	4

	Hilly Land (*mou*)			Afforested Area (*mou*)		
	1928	1929	1930	1928	1929	1930
Fuyang	12	14	14	12	14	14
Yühang	10	10	100	10	10	100
Linan	4	8	10	4	8	10
Yüch'ien	3	40	30	3	40	30
Hsingteng	10	10	120	10	10	120
Ch'anghua	3	40	14	3	40	14
Chiahsing	1	3	20	1	3	20
Chiashan	2	5	—	2	5	—
Haiyen	8	10	3	8	10	3
T'sungteh	—	2	—	—	2	—
P'inghu	11	12	10	11	12	10
T'unghsiang	—	9	10	—	9	10
Wuhsing	3	5	100	3	5	10
Ch'anghsing	7	134	20	7	20	20
Tehts'ing	1	1,000	60	1	48	60
Wuk'ang	—	8	58	—	8	58
Anchi	100	100	130	80	80	80
Hsiaofeng	—	10	—	—	10	10
Ninghsien	2	4	8	2	4	8
Ts'uch'i	20	20	20	10	10	20
Fenghua	2	2	3	2	2	3
Chenhai	3	10	5	3	10	5
Tinghai	3	40	—	3	30	—
Hsiangshan	20	30	36	20	30	36
Nant'ien	—	3	—	—	3	—
Shaohsing	—	15	10	—	15	10
Hsiaoshan	20	10	200	20	10	200
Chuchi	3	10	—	3	10	—
Yüyao	1	10	84	1	10	84
Ch'enghsien	7	8	5	7	8	5
Hsinch'ang	5	4	10	5	4	—
Linhai	10	60	—	10	20	—
Huangyen	6	100	12	6	80	120
T'ient'ai	3	8	7	3	8	7
Wenling	4	5	2	4	5	2
Ninghai	12	6	3	12	6	3
Hsienchü	10	40	—	10	40	—
Chinhua	16	30	42	16	30	42
Lanch'i	20	30	40	20	30	40
Tungyang	—	15	20	—	15	20
Iwu	—	50	20	—	50	20
Yungk'ang	10	34	40	10	34	40
Wui	3	7	27	3	7	27
P'ukiang	160	160	—	100	60	—
T'angch'i	180	40	40	180	40	40
Chühsien	3	5	12	3	5	12

	Hilly Lands (*mou*)			Afforested Area (*mou*)		
	1928	1929	1930	1928	1929	1930
Lungyu	60	80	25	28	80	25
Kiangshan	180	200	—	180	200	—
Ch'angshan	—	38	11	—	38	11
K'aihua	12	15	11	12	15	11
Shunan	—	120	12	—	120	12
T'unglu	—	50	50	—	50	50
Shuian	4	10	—	4	10	—
Shouch'ang	2	20	10	2	20	10
Fenshui	2	—	—	2	—	—
Yungchia	2	12	8	2	12	8
Juian	24	180	47	24	180	47
Lots'ing	—	100	—	—	100	—
P'ingyang	10	12	10	10	12	10
T'aishun	2	6	8	2	6	8
Yühuan	1	15	—	1	15	—
Lishui	10	18	250	10	18	250
Ts'ingt'ien	5	4	5	5	4	5
Chinyun	30	40	50	30	40	50
Sungyang	—	250	15	—	250	15
Hsinch'ang	3	200	12	3	200	12
Lungch'uan	6	15	12	6	15	12
Chingyuan	50	50	—	50	50	—
Yunho	10	20	14	10	20	14
Hsuanp'ing	8	40	14	8	40	14
Chingning	1	80	44	1	50	44

PRIVATE LUMBER COMPANIES

The following is a list of the 12 private lumber companies operating in Chekiang, with particulars:

Location			Timber Area (*mou*)	Date of Establishment
Mousheng	(茂森)	On border of Yühang and Linan	17,000	1920
Hangpeh	(杭北)	Yühang	3,160	1918
Mouli	(茂利)	"	823	1925
Chensheng	(振森)	Linan	3,000	1925
Huasheng	(華森)	"	3,300	1925
Fout'ai	(阜泰)	Chienteh	1,570	1921
Tsungyeh	(重野)	Changhsing	4,050	1917
Hsinghsü	(興墅)	"	3,700	1921
Liyung	(利用)	Shangyü	420	1918

	Location	Timber Area (*mou*)	Date of Establishment
Nanshan Chinhsin (南山勤信)	Chinhua	83	1921
Huapei ..... (華北)	"	15,800	1916
Peishan ..... (山北)	Peishan (北山) Chinhua	5,400	1916

VARIETIES OF TREES

According to the a report compiled some time ago by the Ministry of Agriculture and Commerce, there were 321,251,505 trees in Chekiang, covering 2,453,271 *mou*. The most common trees are pine and fir. The following is a list of the varieties of trees most commonly found in Chekiang:

	Area (*mou*)	Cultivatiou (Trees)	Cost
Pine	894,188	160,377,333	$965,848
Fir	596,362	55,962,347	422,714
Cedar	8,859	4,013,789	13,629
Tungoil tree	14,663	3,988,356	64,280
Cypress	293	111,340	317
Sandal	53	1,667	75
Nan mu (楠 木)	12	675	11
Chu (椆)	59	4,639	63
Camphor	1,643	430,337	1,479
Locust	2,449	600,087	2,297
Elm	1,299	22,811	353
Chestnut	25,154	4,929,308	8,798
Abies firma, S. et Z.	1,946	816,870	1,994
Mallotus japonicus, Muel. Arg.	12	900	60
Quercus serrata, Thunb.	3,543	74,297	705
Maple	12,894	118,737	6,093
Cedrela chinensis	449	6,407	382
Goldenrain	503	241,757	577
Poplar	2,844	375,386	3,291
Willow	1,274	257,595	631
Bamboo	801,040	79,721,199	300,369
Others	83,732	9,195,146	43,581
Total	2,453,271	321,251,505	$1,837,574

	Estimated Value		
	Construction use	For fuel	Total Value
Pine	$3,264,873	$3,344,842	$6,609,715
Fir	3,076,506	1,490,295	4,566,801
Cedar	303,382	138,908	442,290
Tungoil tree	161,632	42,296	203,928
Cypress	2,340	——	2,340
Sandal	346	126	472
Nan mu	584	1,757	2,341
Chu (楮)	341	609	950
Camphor	298,416	8,331	306,747
Locust	3,712	1,168	4,880
Elm	92,495	5,360	97,855
Chestnut	43,417	35,149	78,566
Abies firma, S. et Z. ...	13,823	80	13,903
Mallotus japonicus, Muel. Arg.	80	100	180
Quercus serrata, Thunb.	470	4,851	5,321
Maple	21,665	20,116	41,781
Cedrela chinensis	2,177	3,925	6,102
Goldenrain	2,354	3,466	5,820
Poplar	5.338	3204	8,542
Willow	3,104	15,305	18,409
Bamboo	2,405,264	195,795	2,601,059
Others	117,895	441,749	559,644
Total	$9,820,214	$5,757,432	$15,577,646

BOOK FIVE

FISHERY AND STOCK RAISING

CHAPTER I

INTRODUCTION

BEING one of China's coastal provinces, Chekiang provides opportunities for the fishing industry, and the first company to engage in such enterprise was the Kiangsu-Chekiang Fishing Company (江浙漁業公司), organized in the latter part of the Ching Dynasty by Chang Chi-chih (張季直) a well-known industrial leader. The headquarters of the company were at Kiang-pei-an (江北岸), Ningpo, and it operated three fishing-boats, the Fuhai (福海), Fuche (富浙) and Yuche (裕浙), but owing to mis-management and financial difficulties the company was forced to close down after a short period of operation. After the establishment of the Republic another concern, known as the Yuan Yuan Fishing Company (源源漁輪公司), came into existence, but for the same reason suspended operations before achieving any results.

The coast of Chekiang is over 2,100 *li* in length, and there are a number of islands and harbors which are ideal for fishing operations, the most important being the Choushan Archipelago (舟山羣島), Yuhuan Island (玉環島), Ningpo, Changtukang (長塗港), Shihpu (石浦) and Wenchowwan (溫州灣). The number of families engaged in fishing is about 100,000, owning over 17,000 boats, and there are no less than 3,000,000 people who are directly or indirectly depending upon fishing for their livelihood. Operations are almost entirely conducted by old-style methods, though modern appliances are employed by the two boats, Min Sheng (民生) No. 1 and No. 2, owned by the Provincial Fishery School (省立水產科職業學校). Classified according to methods of fishing, the industry may be further grouped into "big pair boats" (大對船), "small pair boats" (小對船) *ta pu wong* (大浦網), *chang wong* (張網), *liu wong* (溜網), and *tiao chuan* (釣船), whose special characteristics are explained below. The total number of fishing-boats employ-

ing old-style methods is 10,000, of which 2,500 belong to the "small pair boat" variety, 2,110 to the *liu wong*, 1,400 to the *ta pu wong*, 1,100 to the *chang wong*, 1,000 to the "big pair boat" variety, 900 to the *tiao chuan*, and with 1,000 other miscellaneous craft. The fishing season for "big pair boats" lasts from the beginning of September to the middle of April, that for "small pair boats" and *chang wong* from April to June, and for *liu wong* from April to August. The busy season for other varieties usually comes within the summer and autumn months.

The principal catches in coastal fishery consist of the "big" *wongyu* fish (大黃魚, *Corvula schlegeli*), the small *wongyu* fish, cuttlefish, hair-tails, sharks, eels, *leyu* (鱺魚) and *changyu* (鯧魚, *Stromateoides argenteus*, Euphrasen), with flounders, progy, awabi, soles, *cheng tze* (鯉子, *Solecurtus constricta*, Lamarck), crabs, jellyfish, and seaweed. The annual catch of "big" *wongyu* fish amounts in value to $5,000,000, and that of the "small" *wongyu* fish to $8,000,000.

Owing to the absence of large rivers and lakes, freshwater fishery in the Province is not well developed, and the strong currents in the more important waterways such as the Chientang, Tsao-ê, Linkiang, Oukiang, and the Grand Canal do not offer good breeding-grounds. The districts which are most noted for freshwater fish are, Haiyen, Chenhai, Ch'anghsing, Tehts'ing, and Shangyü, and their catches consist chiefly of *shihyu* (鰣魚, *Ilisha elongata*), carp, "green" fish (青魚), shrimps, and crabs.

Fish-culture is an important enterprise in the Province, fry being chiefly imported from Kiukiang (九江), Kiangsi Province, and cultivated in Linhu (菱湖) and Yuanchiahui (袁家滙), two towns in Wuhsing, before being distributed throughout the Province. Culture is carried on in two categories, the raising of freshwater fish and of clams, cockles, and other molluses. The former chiefly consists of "green" fish, carp, *lienyu* (鰱魚) *Hypophthalmichthys* moritrix, C. & V.); "grass" fish (草魚) and *pienyu* (鯿魚), culture being concentrated at Wuhsing and Chiashing, while the cultivation of shellfish is

concentrated at T'ient'ai Ninghsien, Haiyen, Fenghua, and Luheng Island (六橫島), where the annual catch of clams amounts to $1,000,000.

A large industry has been developed in the preservation of marine products, the principal output being dried *wongyu* and dried cuttlefish. There are 200 concerns engaged in making dried *wongyu*, all located at Tungshanchiao (東山角), in Taishan (岱山), and Taotouao (倒斗凹) in the Chüshan (衢山) Islands. Their output is three kinds, *kua hsiang* (瓜烊), *chao hsiang* (潮烊), and *lao hsiang* (老烊), the two latter being chiefly exported to Kiangsu Province. The makers of dried cuttlefish are concentrated in the Choushan Archipelago, and their output is exported as far away as the Straits Settlements. Other preserved marine products of importance are dried eels, *leyu*, jellyfish, shrimps, shrimp eggs, and salted hair-tails.

Fish and marine products are exported to outside markets by "ice fresh" boats (冰鮮船) and "salt fresh" boats (鹹鮮船), a distinction explained below. The chief markets served are Shanghai, and Foochow and Amoy in Fukien Province, the chief export centres being Ninghsien, Tinghai, Hsiangshan, Nant'ien, Linhai, and Wenling.

CHAPTER II

FISHERY

COASTAL

ALONG the coast of Chekiang are a number of islands and harbors suitable for fishing operations. In regards to islands, the Choushan Archipelago (舟山羣島), Nantien (南田島), Yuhuan (玉環), Huang-ta-ao-shan (黃大礁山), Tung-tou-shan (洞頭山), Nan-chi-shan (南箕山), and Hsiao-jung (小溶島) are the most famous, while Ningpo, at the mouth of the Yungkiang (甬江), Changtukang (長途港), on the Choushan Archipelago, Shihpu (石浦), off the coast of Sanmenwan (三門灣), and Yungchia, at the mouth of the Oukiang (甌江), are the most important harbors along the Chekiang coast.

As already stated, there are 100,000 families, owning about 17,000 boats, engaged in the fishing industry. Their methods may be classified as new-styled and old-style fishery, the former using steamers in place of ordinary fishing-boats, a further difference being that on the steamers gear is operated by machinery. In 1903 the Kiangsu-Chekiang Fishing Company, a semi-official concern, was organized, and bought a steamer, the Fuhai, from Germany, and later acquired two other steamers, the Fuche and Yuche. Business for the first few years proved very successful, but owing to mismanagement the company was finally forced to close down. After a few years the enterprise was taken up by the Yuan Yuan Fishing Company, which operated only one steamer, the Chenning (鎮寧), which foundered in 1932 during a storm, since when the company has suspended operations. The modern type of fishing-boat propelled by sail and whose gear is worked by hand, had its boom in 1923, but owing to lack of proper training has gradually declined, and there are now only two boats, Min Shen No. 1 and No. 2, owned by the Provincial Fishery School, engaged in this type of fishing, and used solely as training-schools for students.

Of the old-style methods of fishing several types may be distinguished, each different in the type of boat used and the mode of fishing adopted, and are briefly described as follows:—

"Big pair boats".—This type is the most important engaged in fishing off Chekiang, and the fishing-grounds covered extend from the Lussuyang (呂四洋) section of the China Sea in the north to the Feishanyang (菲山洋) section in the south. The total number of boats engaged is about 1,000 pairs, divided into the Ningpo group (over 400 pairs) and the Tinghai group (over 500 pairs). The majority of these vessels are operated from Shenchiamen (沈家門) in the Choushan Archipelago.

Boats of this type are built of wood and are 42 feet long with a beam of about 8½ feet, and can carry a load of 2,000 piculs. When at sea these boats always go in pairs, hence the name. One vessel is used to carry food, water, and fuel, and is known as *wei chuan* (喂船) or feeder, while the other does the casting and hauling of nets, and is known as *wang chuan* (網船) or "net" boat. The catch of this type of boat chiefly consists of small and large *wongyu*, hairtail, cuttlefish, *leyu*, *changyu*, and crabs. The total maximum catch for a pair of boats in one season is between six and seven thousand dollars.

Classified according to duration of their cruises, this type of boat may be grouped into *chang chuan* (長船) or "long" boat, *tuan chuan* (短船) or "short" boat, and *chun chuan* (春船) or spring boat. The "long" boats usually go to sea in August and return in May; the "short" boats cruise from August to March, and the "spring" boats from January to March. The working expenses of a "long" cruise amount to about $1,900, including $520 for hire of the boats, $600 for rice, $80 for firewood, $270 for nets, $120 for ropes, $100 for baskets and other gear, $200 for miscellaneous items, and $300 interest on these advances. The wages paid to all hands employed on the two boats total about $2,000, ranging from $60 to $400 for each man, but most crews adopt the profit-sharing system, sharing the profits of their catch.

"Small pair boats".—Except that they are smaller in size, vessels of this type are operated in exactly the same way as the "big pairs." The total number of fishing-boats of this class is about 2,500 pair, of which 240 are concentrated in Choushan Archipelago, 100 at Hsiangshan Islands, 1,100 at Chuanshan (穿 山) and Hengan (橫 岸), 550 at Huangyen, 100 at Langchishan (琅 璣 山), and 350 at Ninghai. The catch taken by this type of craft consists mainly of *wongyu*, hair-tails, and eels, with *changyu* last in importance. After the spring season is over these boats are engaged in getting cuttlefish, which forms a secondary business for this type. As these boats are painted in different colors in different places, they are known by different local names, such as the "red head" pairs (紅 頭 對) of Taichow, the "white bottom" pairs (白 底 對) of Wenchow, the "fancy head" pairs (花 頭 對) of Ninghai, and the "descending hill" pairs (下 山 對) of Tinghai.

The ta put wong type.—These fishing-boats are chiefly engaged in catching big *wongyu* fish, and therefore are concentrated around Yangshan (羊 山), Chükang (衢 港) and Huangtayang (黃 大 洋). There are in Chekiang over 1,400 boats of this type, of which 220 are in Ninghsien, 470 in Fenghua, 120 in Hsiangshan, 30 in Chenhai, 40 in Tiaomen (釣 門), 110 in Huni (湖 泥), 90 in Taishan, 194 in Lomen (螺 門), 140 in Luheng (六 橫) and Paitu (白 塗), and 60 in Shenchiamen.

Vessels of this type are larger than the "big pairs," and the total expenses for each cruise amount to about $2,000, including $360 for two nets, $100 for ropes and bamboo poles, $400 for hire of the boat, and the balance for wages and food for the crew.

The liu wong type.—These boats are of very sturdy build, as their fishing-grounds are usually about 100 miles from the coast. They are further classified into two groups, the *ta liu* (大 流), which put to sea before the Tomb Festival (about April 6), and the *hsiao liu* (小 流), which start their cruises after that festival. The principal catches consist of *leyu* and sharks, the fishing starting in

April and ending in August. There are about 2,100 boats of this type, of which 70 are concentrated at Shahotou (沙河頭), 80 at Hsiehpu (蟹浦), 1,180 in the Choushan Archipelago, 650 at Ninghai, 80 at Wenling and 40 at Huangyen. Owing to the length of time these craft spend at sea, they carry a large amount of salt and ice to preserve their catch.

The chang wong type.—There are two categories of this type, the *wongyu* or cuttle-fish *chang wong*, and the jelly-fish *chang wong*. The former are engaged in catching *wongyu*, cuttlefish, *changyu*, *leyu*, and shrimps, while the latter are exclusively employed in catching jelly-fish. The season for the *wongyu chang wong* type starts at the beginning of April and ends early in May, while the jelly-fish catchers are engaged during the autumn. The total number of fishing-boats of this type in Chekiang is 1,100, of which 90 are concentrated around the Tinghai Islands, 50 in Nant'ien, 50 in Linhai, and 70 in Ninghai.

The "cuttle-fish" type.—The cuttle-fish fishery is concentrated in the Chung Chieh Shan Islands (中街山), with the islands of Tsing Pin (青濱), Miao Tse Hu (廟子湖) and Huang Hsing (黃興) the most important centres. This type is again sub-divided into two groups, the Ningpo group using nets and the Taichow group using bamboo "pots" in fishing. The total number of boats in the Taichow group is 440, of which 280 are manned by natives of Wenchow and 160 by natives of Taichow. The fishing season starts in May and ends in June, the total catch amounting to between four and five million dollars.

The tiao chuan type.—These boats are engaged in fishing by hook and line, and are divided into the *la tiao chuan* (拉釣船), *hsiao tiao chuan* (小釣船), and *tiao tsao chuan* (釣漕船) groups. The first is engaged principally catching sharks, with *wongyu* next in importance, and the fishermen are mostly natives of Fenghua. The *hsiao tiao chuan* group is engaged principally in fishing for hair-tails, with *wongyu*, sharks, and eels coming next. The fishermen in this group are generally natives of Fukien, and their boats, known as *hsiao pai tui* (小白對) or "small white pairs," number 910, with 50 in Tinghai, 630 in

Wenling, 30 in Yühuan, 50 in P'ingyang, 70 in Lots'ing, and 80 in Yungchia. This type usually goes out fishing in groups of five, consisting of one big boat and four small ones. The large craft, known as the "mother" boat, measures over 50 feet in length, and acts as a floating storehouse, where the fish caught by the small boats is preserved with salt.

The tiao tsao chuan group is composed of ordinary boats engaged in fishing the year round. They are mostly found in Kanmen (坎門), Shipu, Chingpin, Miaotsehu and Shenchiamen.

The chuan wong (串網) type.—There are 260 boats belonging to this type. Their fishing-ground is around the Choushan Archipelago, and their catch principally consists of *wongyu*, shrimps, crabs, and miscellaneous fish.

The hsia lo (蝦羅) type.—These are small fishing boats engaged in catching shrimps and other in-shore fish. Their season extends the whole year round, and about 70 of these boats are found at Wenling and Linhai.

FRESHWATER FISHERIES

Freshwater fisheries are not very prosperous in Chekiang, owing to lack of large rivers and lakes. The most famous freshwater product is the "black-backed" carp (黑脊鯽魚) found in the Chuangchaho River (莊紫河), Haiyen, the annual catch amounting to about 3,000 piculs. Other kinds of freshwater fish of comparative importance are the *shihyu* of Chenhai and Shanyü, an annual catch of 2,000 piculs, *lienyu* at Haiyen and Tehts'ing, 8,000 piculs, carp from Chenhai and Ch'anghsing, 5,000 piculs, and *chiyu* (鱭魚, *Collia nasus*, T. & S.) from Ch'anghsing, 15,000 piculs annually.

CHAPTER III

FISH CULTURE

AIDED by favorable natural surroundings, fish culture become an important industry in Chekiang Province, and is pursued in two directions, fry raising and fish cultivation.

FRY RAISING

Linhu (菱湖), in Wuhsing district, is the most important centre for fry raising, with Yuanchiahui (袁家滙) coming next. Fry is imported from Kiukiang (九江), Kiangsi Province, in the spring, and kept in the ponds through the summer, when the fry is about one inch in length. Sometimes fry is kept until the spring of the following year, when the fish attains a length of three or four inches. Owing to the unscientific methods followed, the death-rate among fry usually amounts to between 30 and 40 per cent.

Fry raising in Linhu is generally pursued by farmers as a secondary occupation. The total number of families engaged in this business is about 1,800, and their total output amounts to the value of $90,000. The average price of fry is $18 per picul for *chiyu* (溪魚), $13 for "grass" fish, and $10 for *lienyu* and carp. Besides supplying the needs of the Province, the market also extends to Kiangsu, Fukien, and Kuangtung.

FISH CULTIVATION

Fish cultivation in the Province includes freshwater and sea products. Wuhsing, Shaohsing, Chiahsing, Hsiaoshan, and Ninghsien are the chief centers for the cultivation of freshwater fish. The fry is chiefly bought from Linhu, the prices ruling for 10,000 fish being $360 for *lienyu*, $400 for *paoyu* (鮑魚), $600 for *pienyu* (鯿魚) $800 for "green" fish, and $600 for "grass" fish. The following is a brief description of conditions in each of the fish cultivation districts:—

Wuhsing.—In addition to fry-raising, Linhu, a town in Wuhsing, is also noted for fish cultivation. The fishponds in the town number several thousand, and the annual output is valued at $6,000,000. Other towns around Linhu, such as Luku (六庫), Yenchiahui (嚴家滙), and Chikang (集港) are also important centers of this industry.

Shaohsing.—Over 1,000 families are engaged in the cultivation of freshwater fish at Shaohsing, where the annual output is 35,000 piculs, valued at over $450,000. The *lienyu* is the principal variety cultivated, with "green" fish and carp next in importance. In addition to local consumption about 30 per cent of the production is shipped to Ninghsien, Yüyao and Shangyü.

Chiahsing.—Fish cultivation in Chiahsing is concentrated at Taoyen (陶堰) and Manlikang (鰻鱺港), the number of fishponds in the city being over 100.

Hsiaoshan.—Hsiaoshan is another important center, with over 150 fishponds, the area of which ranges from 30 to 500 *mou*, and over 3,000 families directly dependent on the cultivation of fish. The chief varieties raised consist of *lienyu, pienyu,* "green" and "grass" fish, which are shipped to Ninghsien, Ch'enghsien, Shangyü, Yüyao, Shanghai, and Hangchow. The annual output is estimated at 500,000 catties.

Ninghsien.—There are 11 fishponds in this city, the largest being Meihu (梅湖), owned by the Chienhu Fish Cultivation Company (鑑湖養魚公司), with an area of 5,400 *mou*. The Ta Yen Tou (大堰頭) and Chi Tang Ao (赤蕩喬) ponds, with an area of 1,080 *mou* each, are next in importance.

The cultivation of sea products is limited to *cheng tze*, cockles and other molluses. The ostracean fields are chiefly at T'ient'ai, the *cheng tse* fields at Ninghai and Fenghua, and cockles at Chenhai. The annual output of *cheng tze* amounts to the value of $1,000,000, and that of molluses to several tens of thousands of dollars.

CHAPTER IV

CURING AND TRANSPORT

THE CURING of aquatic products was at first pursued by fishermen as a sideline, but the methods employed are primitive and unhygienic, and it is not infrequent that fish becomes bad before it is sold. The Provincial Fishery School has recently established a model factory for the preservation of aquatic products by modern methods, but as this enterprise is still in an experimental stage, results have to be awaited.

Under the old method the chief lines of cured marine products consist of dried *wongyu* and dried cuttlefish, a brief description of which follows.

CURED "WONGYU"

The curing industry for *wongyu* fish is concentrated at Tung Sha Chiao (東沙角), Taishan (岱山) Island, and Tao Tou Ao (倒斗凹), Chüshan (衢山) Island. The number of curing-factories at these two places is 200, the workers being all natives of Ninghsien.

The cured fish is of three kinds, known on the market as *kua hsiang* (瓜鯗), *chao hsiang* (潮鯗) and *lao hsiang* (老鯗). The *kua hsiang* is prepared by rubbing salt into the fish after being gutted. After two or three days the salted fish is dried in the sun for one or two days, and is then ready for market, but owing to the short time taken in preparation it will not remain good for long, and is liable soon to rot. The *chao hsiang* is prepared in the same way except that the fish is not so thoroughly dried. The market for this product is generally found in Kiangsu Province. The *lao hsiang* is also prepared in the same way, but more salt is used, and the duration of exposure to the sun is 10 days. The fish is then covered with dried rice straw and stored until the end of next year before being ready for the market.

The fish curers also turn out a number of by-products, the most important from the *wongyu* being the dried air

bladder, which is of three shapes, round, flat and long. A very brisk business is done in this product. Another important by-product is fish roe, salted and unsalted, the latter fetching a higher price. Fish offal is sold to local farmers to be used as fertilizer.

DRIED CUTTLE-FISH

The making of dried cuttle-fish is concentrated in the Choushan Archipelago. The abdomen is cut open before the fish is thoroughly dried in the sun for a few days, after which it is ready for market. Out of four piculs of fresh cuttle-fish, which is sold at an average of $9 per picul, one picul of dried fish can be made, and sold at $40-$50 per picul.

In preparing dried cuttle-fish the air-bladder is salted separately for use as a table delicacy, and is sold at $3-$4 per 100 catties.

OTHER PRESERVED PRODUCTS

In addition to the curing of *wongyu* and cuttle-fish, a considerable output of dried "small" *wongyu*, eels, *leyu*, salted jelly-fish and hair-tails, dried shrimps, and dried shrimp-eggs is produced in Yungchia and T'ient'ai, and a large quantity is exported to neighboring provinces.

TRANSPORTATION

Marine products in Chekiang Province are transported either by "ice" boats (冰鮮船), "salt" boats (鹹鮮船), "ice" barrels (冰鮮桶頭) and sailing boats. The "ice" boats are ordinary sailing vessels loaded with natural ice used for storage purposes to keep the fish in good condition. These vessels have their destination at Shanghai or Ninghsien, whence, the fish, packed in ice, is shipped to other places. The "salt" boats carry their fish cargoes packed in salt. Ice barrels are used to pack fish for transport from one place to another, usually by steam-launches. The barrels are made of wood, and the contents are packed with natural ice. Sailing-boats are usually employed to carry preserved or fresh products for short distances. The chief ports of call of these vessels are Hangchow and Ninghsien, whence their supplies are trans-shipped to other centers.

CHAPTER V

MARKETING OF AQUATIC PRODUCTS

ABOUT SIXTY per cent of the marine products produced in Chekiang is consumed in the Province, while the balance is shipped to Shanghai, Foochow, and Amoy. The business is handled through *yu hong* (魚行), who act as middlemen between the fishermen and fish merchants, and receive a total of 9 per cent commission from both sides. Besides the *yu hong*, there is another class known as *yu chang* (魚棧), who loan money or fishing gear to fishermen on condition that their entire catch is sold through them. After the fish is disposed of, the *yu chang* deducts the amount loaned or the hire of gear together with interest, which usually amounts to six or seven per cent from the proceeds, and the balance goes to the fishermen.

Ninghsien has the largest number of *yu hong* in the Province, totalling 30, with an aggregate capital of $100,000. Huangyen comes next with 20, and Yungchia third with 9.

Fish merchants in the Province may be grouped into *shui lu shang* (水路商), or "water route" merchants, *ping sien shang* (冰鮮商), or "ice" merchants, *hsien sien shang* (鹹鮮商), or "salt" merchants, *tung tou shang* (桶頭商), or "barrel" merchants, and *cha yu shang* (雜魚商) or "miscellaneous" merchants. The "water route" merchants are merely agents between the fishermen and the wholesale dealers, and charge a commission of 1 per cent on the total business done. Usually, a *shui lu shang* advances loans to the fishermen when they are in difficulties, but the interest charged is exceedingly high. The "ice" merchants are collecting agents stationed in places where the fishing boats are concentrated. After buying their supplies the fish is immediately shipped by sailing boats, packed in natural ice, to the principal markets. The activities of the "salt" merchants are exactly the same as those of the "ice" merchants, but the fish

is packed in salt instead of ice. The "barrel" merchants usually concentrate in places where fishing-boats make frequent calls, and their business is confined to the rapid transport of fish packed in ice barrels, which are shipped by steamship or rail to places where the demand for such products is high and prices are good. Unlike the above mentioned groups which deal exclusively in fresh fish, the "miscellaneous" merchants deal in all kinds of fish, fresh or dried, as well as other marine products.

CHAPTER VI

LIVE STOCK AND POULTRY

WATER-BUFFALO are largely employed in Chekiang for various kinds of work on the land. The following table shows the number of cattle in various districts of the Province, including those used for haulage and those bred for market:—

	Number	Price per head	Total Value
Hanghsien	2,500	$75	$263,500
Fuyang	2,000	50	100,000
Yühang	1,982	52.94	104,995
Linan	400	40	16,000
Yüch'ien	2,500	40	100,000
Hsingteng	800	40	32,000
Ch'anghua	2,600	80	208,000
Chiahsing	35,000	80	2,800,000
Chiashan	8,320	80	665,600
P'inghu	850	60	51,000
Wuhsing	1,240	80	102,400
Ch'anghsing	10,000	50	500,000
Tehts'ing	113	85	9,605
Wuk'ang	635	65	41,275
Anchi	5,872	80	469,760
Hsiaofeng	3,200	50	160,000
Ninghsien	20,000	50	1,000,000
Ts'uch'i	1,000	50	50,000
Fenghua	7,000	30	210,000
Chenhai	40,000	50	2,000,000
Tinghai	100	70	7,000
Hsiangshan	13,120	50	656,000
Nant'ien	2,160	50	108,000
Shaohsing	2,580	75	193,500
Hsiaoshan	5,800	70	406,000
Chuchi	40,000	75	3,000,000
Yüyao	3,500	50	175,000
Shangyü	2,000	75	150,000
Ch'enghsien	5,000	50	250,000
Hsinch'ang	5,800	30	174,000

	Number	Price per head	Total Value
Linhai	14,850	$30	$445,500
Huangyen	20,000	40	800,000
Ninghai	24,000	40	960,000
Wenling	50,900	45	2,290,500
T'ient'ai	54,600	45	2,457,000
Hsienchü	13,500	20	270,000
Chinhua	5,700	50	285,000
Lanch'i	9,400	75	705,000
Tungyang	2,500	40	100,000
Iwu	10,300	50	515,000
Yungk'ang	8,800	50	440,000
Wui	2,000	40	80,000
P'ukiang	8,000	45	360,000
T'angch'i	3,430	50	171,500
Chühsien	6,855	65	445,575
Lungyu	5,000	30	150,000
Kiangshan	3,213	70	224,910
Ch'angshan	2,340	60	140,400
K'aihua	5,090	60	305,400
Chienteh	3,447	60	206,820
Shunan	4,000	25	10,000
T'unglu	500	50	25,000
Shuian	6,300	40	252,000
Shouch'ang	3,000	40	120,000
Fenshui	2,800	50	140,000
Yungchia	3,000	30	90,000
Juian	1,800	35	63,000
Lots'ing	3,500	23	80,500
P'ingyang	45,000	40	1,800,000
Taishun	2,015	50	100,750
Yühuan	3,120	40	124,800
Lishui	21,500	30	645,000
Ts'ingt'ien	4,400	30	132,000
Chinyun	10,000	40	400,000
Sungyang	5,900	50	295,000
Shuich'ang	11,159	50	557,950
Lungchuan	1,350	65	87,750
Ch'ingyuan	2,000	50	100,000
Yunho	500	40	20,000
Hsuanp'ing	8,500	35	29,750
Chingning	6,000	30	180,000
Total	626,341	—	30,609,740

DISTRIBUTION

In addition to supplying local requirements cattle raised in Chekiang are exported to Shanghai, Soochow, Wusih, and Foochow in considerable numbers. During recent years, however, very few cattle have been raised owing to business depression, and for this reason a ban against slaughtering was enforced in districts where an insufficient number of cattle had been raised. In former days a cattle market (牛市) was found in most of the principal cities. In the market at Chuchi over 5,000 heads of cattle were brought for sale on the 15th of the second month and tenth month of the lunar calendar, but during recent years these markets have gradually disappeared. The following table shows the trade in cattle in various districts:

	Local	Outside	Markets
Hanghsien	3,500	——	——
Fuyang	1,500	500	Hangchow
Yühang	1,425	557	Hangchow
Linan	100	300	Shanghai
Yüch'ien	2,000	500	S'hai, Hangchow
Hsinteng	2,000	——	——
Ch'anghua	2,520	80	Sungkiang, and Ninkou
Chiahsing	35,000	——	——
Chiashan	8.320	——	——
P'inghu	2,000	——	——
Wuhsing	1.240	——	——
Ch'anghsing ..	9.600	400	Soochow, Changchow
Tehts'ing	2,000	——	——
Wuk'ang	635	——	——
Anchi	5,872	——	——
Hsiaofeng	2,700	500	Hanghsien, Wuhsien
Ninghsien	24,600	——	——
Ts'uch'	400	600	Along the Shanghai- Hangchow-Ninpo Railway
Fenghua	5,000	2,000	Ningpo, Shanghai
Chenhai	50,000	——	——
Tinghai	1,100	——	——
Hsiangshan ..	10,000	3.120	P'inghu, Chapu, Tientai
Nant'ien	2,000	160	"

	Local	Outside	Markets
Shaohsing	3,000	——	——
Hsiaoshan	4,000	1,800	Hangchow, Chiahsing, Shanghai
Chuchi	27,000	13,000	„
Yüyao	3,500	——	——
Shangyü	2,000	——	——
Ch'enghsie ..	2,000	3,000	Shanghai
Hsinch'ang ...	4,300	1,500	Soochow, S'hai
Linhai	7,000	7,850	P'inghu, Chiahsing Ningpo
Huangyen	5,000	15,000	P'inghu, Ningpo
Ninghai	10,000	14,000	„
Wenling	40,400	10,500	P'inghu, Chapu, T'ient'ai
T'ient'ai	21,840	32,760	Hsinch'ang, Chiahsing, Shanghai
Hsienchü	4,300	9,200	Chinhua
Chinhua	5,700	——	——
Lanch'i	1,900	7,500	Hangchow, Chiahsing, Wuhsing, Shanghai
Tungyang	2,500	——	——
Iwu	9,500	800	Wusih
Yungk'ang ...	8,400	400	Iwu, Chinhua, Wusih
Wui	5,000	——	——
P'ukiang	18,000	——	——
T'angch'i	3,400	——	——
Chühsien	4,375	2,480	Chinhua, Iwu
Lungyu	5,000	——	——
Kiangshan	3,213	——	——
Ch'angshan ...	2,340	——	——
K'aihua	4,590	500	Lanch'i
Chienteh	3,400	47	Hangchow, Haining
Shunan	3,500	500	Lanch'i
T'unglu	2,000	——	——
Shuian	6,300	——	——
Shouch'ang ...	3,000	——	——
Fenshui	3,000	——	——
Yungchia	3,000	——	——
Jüian	1,800	——	——
Lots'ing	1,300	2,200	Wenling, Linghai, Ninghsien
P'ingyang	45,000	——	——
T'aishun	1,950	65	Neighboring districts
Yühuan	2,820	300	Wenling

	Local	Outside	Markets	
Lishui	19,500	2,000	Yungho, chuan, yuan	Lung- Ch'ing-
T'singt'ien ...	4,400	——	——	
Chinyun	5,000	5,000	Yungk'ang, yang	Sung-
Sungyang	5,720	180	Yungk'ang,	Iwu
Shuich'ang	11,159	——	——	
Lungchuan ...	1,350	——	——	
Ch'ingyuan ...	2,000	——	——	
Yunho	500	——	——	
Hsuanp'ing ..	7,800	700	Yungk'ang, Chinhua,	Wui, Lishui
Chingning	6,000	——	——	
Total	522,269	139,999	——	

SHEEP AND GOATS

The raising of sheep and goats in Chekiang is one of the secondary occupations among farmers, as the stock require little attention for pasturing. In this Province the goats outnumber sheep. Chiahsing, P'inghu, and Hanghsien lead in raising stock, followed by Haining, Yühuan and Fenghua, the aggregate number amounting to 1,146,473 valued at $5,350,873. The following table shows the number of sheep and goats in various districts of the Province:

	Number	Average price per head	Total Value
Hangchow Municipality ..	3,600	$6	$21,600
Hanghsien	100,000	5	500,000
Haining	50,000	3	150,000
Fuyang	21,000	3	63,000
Yühang	6,700	5	33,500
Linan	800	3	2,400
Hsint'eng	600	2	1,200
Ch'anghua	75	2	150
Chiahsing	280,000	4	1,120,000
Chiashan	16,000	2.5	400,000
Haiyen	4,056	5	20,280
Ts'ungteh	50,000	4	200,000
P'inghu	1,500	3	4,500

	Number	Average price per head	Total Value
T'unghsiang	150,000	$5	$750,000
Wuhsing	15,800	10	158,000
Ch'anghsing	20,000	6.5	130,000
Tehts'ing	7,396	5	36,980
Wuk'ang	4,650	5	23,250
Anchi	2,300	4	9,200
Hsiaofeng	500	4	2,000
Ninghsien	7,000	5	35,000
Ts'uch'i	2,000	6	12,000
Fenghua	32,000	4	128,000
Tinghai	2,000	4	8,000
Hsiangshan	5,781	3	17,343
Nant'ien	1,200	2.5	3,000
Shaohsing	3,440	3.5	120,400
Hsiaoshan	21,000	2	42,000
Chuchi	2,000	3	6,000
Yüyao	6,750	5	33,750
Shangyü	2,000	5.5	11,000
Ch'enghsien	6,000	5	30,000
Hsinch'ang	4,000	2	8,000
Chuchi	21,591	3	64,773
Huangyen	5,000	2	10,000
Ninghai	4,000	2.5	10,000
Wenling	1,000	5	5,000
T'ient'ai	20,000	3	60,000
Hsienchü	15,000	3	45,000
Chinhua	1,380	5	6,900
Lanch'i	4,000	4.5	180,000
Tungyang	1,000	4	4,000
Iwu	5,000	4	20,000
Wuk'ang	600	3	1,800
P'ukiang	2,000	3.5	7,000
T'singt'ien	8,000	4	32,000
Chinyun	6,000	2	12,000
Sungyang	300	3	900
Hsinch'ang	480	4	1,920
Lungchuan	750	6.5	4,875
Yunho	500	4	2,000
Hsuanp'ing	450	6	2,700
Total	1,146,473	—	5,350,873

Most of the sheep and goats raised in Chekiang are slaughtered locally, with a small business done with outside markets. The following table shows the sheep and goats disposed of in a year for local and other markets:—

	Local	Outside	Markets
Hangchow Municipality .	3,600	——	——
Hanghsien ...	30,000	70,000	Chiahsing, Wuhsing
Haining	40,000	10,000	Shanghai Shaohsing
Fuyang	21,000	——	——
Yühang	6,700	——	——
Linan	800	——	——
Hsinteng	600	——	——
Ch'anghua	750	——	——
Chiahsing	90,000	190,000	S'hai, Ts'ungteh
Chiashan	16,000	——	——
Haiyen	4,056	——	——
T'sungteh	120,000	20,000	Hangchow, S'hai
P'inghu	1,500	——	——
T'unghsiang ...	50,000	100,000	——
Wuhsing	15,800	——	——
Ch'anghsing ..	15,000	5,000	Wuhsing
Tehts'ing	7,396	——	——
Wuk'ang	4,650	——	——
Anchi	2,300	——	——
Hsiaofeng	1,000	——	——
Ninghsien	7,000	——	——
Ts'uch'i	2,000	——	——
Fenghua	12,000	20,000	Ninghsien
Tinghai	2,000	——	——
Hsiangshan ..	5,781	——	——
Nant'ien	400	800	Shipu, Ninghai
Shaohsing	42,840	——	——
Hsiaoshan	21,000	——	——
Chuchi	2,000	——	——
Yühang	6,750	——	——
Shangyü	2,000	——	——
Ch'enghsien ..	6,000	——	——
Hsinch'ang ...	3,000	1,000	Ch'enghsien
Linhai	15,910	5,681	T'ient'ai
Huangyen	5,000	——	——
Ninghai	2,000	2,000	Fenghua, Ninghsien
Wenling	1,000	——	——
T'ient'ai	20,000	——	——
Hsienchü	15,000	——	——
Chinhua	1,380	——	——
Lanch'i	4,000	——	——

	Local	Outside	Markets
Tungyang	1,000	——	——
Iwu	5,000	——	——
Wui	600	——	——
P'ukiang	2,000	——	——
T'angch'i	1,014	——	——
Ch'ühsien	3,000	——	——
Sungyu	500	——	——
Kingshan	1,240	——	——
Ch'angshan ...	6,000	——	——
Kaihua	2,820	——	——
Chienteh	8,000	——	——
T'unglu	500	——	——
Shouch'ang ...	1,000	——	——
Fenshui	2,900	——	——
Yungchia	800	700	Foochow
Juian	3,750	——	——
Lots'ing	2,500	6,500	Fukien, Taichow
P'ingyang	80.000	20,000	——
T'aishun	15,000	5,000	Foochow
Yühuan	20,000	24,000	Shanghai
T'singt'ien	8,000	——	——
Chinyun	5,000	1,000	Yungk'ang Tungyang
Sungyang	300	——	——
Shuich'ang	480	——	——
Lungch'ien ..	750	——	——
Yunho	500	——	——
Hsuanp'ing ...	450	——	——
Total	900,317	481,681	——

HOG RAISING

Chekiang hogs differ from those raised in districts north of the Yangtse, the former having whitish hairs, while the latter are mostly black. Chekiang hogs are fed on beans and bran, and their flesh is much more platable than that of animals fed on distilers' bran.

Districts where hogs are bred include Lanch'i, Tungyang, P'ingyang, and Iwu, aggregating over 140,000 head a year, followed by Chinhua and T'ient'ai. The annual production of hogs in Chekiang is estimated at 2,410,578 head, valued at $46,629,595, distributed as follows:

	Annual Production	Average Price	Total Value
Hangchow Municipality ..	7,350	$16.00	$117,600
Hanghsien	50,000	15.00	750,000
Ninghai	8,000	20.00	160,000
Fuyang	60,000	20.00	1,200,000
Yühang	7,930	23.00	182,390
Linan	3,500	30.00	105,000
Yüch'ien	8,000	25.00	200,000
Hsinteng	9,000	25.00	225,000
Ch'anghua	20,000	15.00	300,000
Chiahsing	20,000	8.00	160,000
Chiashan	30,000	16.00	480,000
Haiyen	2,500	15.00	37,500
Ts'ungteh	15,000	14.00	210,000
P'inghu	20,000	15.00	300.000
T'unghsiang	30,000	20.00	600,000
Wuhsing	7.530	20.00	150.600
Ch'anghsing	10,000	25.00	250,000
Tehts'ing	1,828	25.00	45,700
Wuk'ang	2,163	30.00	64,890
Anchi	12,000	20.00	240,000
Hsiaofeng	9,800	21.00	205,800
Ninghsien	20,000	25.00	500,000
T'such'i	4,000	25.00	100,000
Fenghua	25,000	20.00	500,000
Chenhai	50,000	20.00	1,000,000
Tinghai	3,800	12.00	456,000
Hsiangshan	21,447	20.00	428,940
Nant'ien	6,000	18.00	108,000
Shaohsing	8,170	25.00	204,250
Hsiaoshan	10,000	20.00	200,000
Chuchi	25,000	20.00	500,000
Yüyao	13,000	20.00	260,000
Shangyü	10,000	20.00	200,000
Ch'enghsien	5,000	25.00	125,000
Hsinch'ang	14,000	18.00	252,000
Linhai	9,000	20.00	180,000
Huangyen	40,000	20.00	800,000
Ninghai	25,000	30.00	750,000
Wenling	40,000	25.00	1,000,000
T'ient'ai	84,000	18.00	1,512,000
Hsienchü	60,000	15.00	900,000
Chinhua	108,600	25.00	2,715,000
Lanch'i	180,000	25.00	4,500,000

	Annual Production	Average Price	Total Value
Tungyang	170,000	$20.00	$3,400,000
Iwu	142,500	15.00	2,137,500
Yungk'ang	60,000	20.00	1,200,000
Wui	31,000	25.00	775,000
P'ukiang	67,000	23.00	1,541,000
T'angch'i	5,777	15.00	86,655
Ch'ühsien	64,230	25.00	1,605,750
Lungyu	60,000	5.75	345,000
Kiangshan	37,613	13.01	489,320
Ch'angshan	10,000	25.00	250,000
K'aihua	16,050	20.00	321,000
Chienteh	24,000	18.00	432,000
Shunan	20,000	20.00	400,000
T'unglu	10,000	30.00	300,000
Shuian	12,000	20.00	240,000
Shouch'ang	11,000	16.00	176,000
Fenshui	4,500	10.00	45,000
Yungchia	120,000	20.00	2,400,000
Juian	36,500	20.00	730,000
Lots'ing	50,000	20.00	1,000,000
P'ingyang	150,000	13.00	1,950,000
T'aishun	8,000	25.00	200,000
Yühuan	10,000	20.00	200,000
Lishui	25,400	20.00	508,000
T'singt'ien	31,000	20.00	620,000
Chinyun	60,000	4.00	240,000
Sungyang	15,000	20.00	300,000
Shuich'ang	13,000	40.00	520,000
Lungch'uan	13,500	30.00	405,000
Ch'ingyuan	7,000	30.00	210,000
Yunho	4,890	30.00	146,700
Hsuanp'ing	14,000	20.00	280,000
Chingning	10,000	20.00	200,000
Total	2,410,578	——	46,629,595

Trade in hogs is largely handled by brokers who charge commission at 40 cents per head, but sometimes butchers get their supplies direct from breeders. The annual production of hogs in Lanch'i, Tungyang, Iwu, Chinhua, P'ukiang, Yungk'ang, and Wui amounts to 759,600 head, of which 379,800 are slaughtered for hams. The total production in the Province is put at 2,410,578, of which 2,183,430 are disposed of locally. The following table shows the disposed of hogs in various districts of Chekiang:—

	Local	Outside	Markets
Hangchow Municipality ..	100,000	——	——
Hanghsien	50.000	——	——
Haining	50,000	——	——
Fuyang	60,000	——	——
Yühang	8.930	——	——
Linan	2,500	1,000	Yühang
Yüch'ien	8,000	——	——
Hsinteng	9,000	——	——
Ch'anghua	5,000	15.000	Hangchow
Chiahsing	10,000	10.000	„
Chiashan	30,000	——	——
Haiyen	2,500	——	——
Ts'ungteh	10,000	5,000	Hangchow
P'inghu	10,000	10,000	„
T'unghsiang	30,000	——	——
Wuhsing	7.530	——	——
Ch'anghsing	20,000	——	——
Tehts'ing	13,800	——	——
Wuk'ang	12,163	——	——
Anchi	15.000	——	——
Hsiaofeng	9,800	——	——
Ninghsien	70,000	——	——
Ts'uch'i	4,000	——	——
Fenghua	25,000	——	——
Chenhai	40,000	10,000	Ninghsien
Tinghai	3,800	——	——
Hsiangshan	10,447	11,000	Shippu, Ninghsien
Nant'ien	2,400	2,600	„
Shaohsing	25,200	——	——
Hsiaoshan	10,000	——	——
Chuchi	20,000	5,000	Linpu
Yüyao	13,000	——	——
Shangyü	10,000	——	——
Ch'enghsien	7,000	——	——
Hsinch'ang	12,000	2,000	Ch'enghsien
Linhai	9,000	——	——
Huangyen	30,000	10,000	Ninghsien, Sh'ai
Ninghai	20,000	5,000	Ninghsien
Wenling	20,000	20,000	Ninghsien, Sh'ai
T'ient'ai	84,000	——	——
Hsienchü	58,000	2,000	Shanghai
Chinhua	100,000	8,600	Hangchow
Lanch'i	140,000	40,000	„
Tungyang	169,000	1,000	„
Iwu	100,000	42,500	„
Yungk'ang	45,000	15,000	Shaohsing

	Local	Outside	Markets
Wui	25,000	6,000	Lanch'i
P'ukiang	50,000	17,000	Hangchow
T'angch'i	5,777	——	——
Chühsien	51,030	13,200	Shaohsing
Lungyu	30,000	30,000	Chinhua
Kiangshan	37,613	——	——
Ch'angshan	10,000	——	——
K'aihua	16,050	——	——
Chienteh	24,000	——	——
Shunan	20,000	——	——
T'unglu	10,000	——	——
Shuian	12,000	——	——
Shouch'ang	6,000	5,000	Shaohsing, Lin-pu
Fenshui	4,500	——	——
Yungchia	85,000	35,000	Shanghai
Juian	36,500	——	——
Lots'ing	30,000	20,000	Fukien
P'ingyang	50,000	100,000	Taichow, S'hai
T'aishun	7,000	1,000	Chinyuan
Yühuan	8,000	2,000	Fukien, S'hai
Lishui	15,000	10,400	Yunho
T'singt'ien	31,000	——	——
Chinyun	40,000	20,000	Yungk'ang
Sungyang	15,000	——	——
Shuich'ang	13,000	——	——
Lungchuan	15,000	——	——
Ch'ingyuan	20,000	——	——
Yunho	3,890	1,000	Lishui
Hsuanp'ing	10,000	4,000	Sungyang,
Chingning	10,000		
Total	2,183,430	480,300	——

POULTRY

Under this heading are included chickens, ducks, and geese, the first being the most numerous. Chickens raised in Chekiang are of two kinds, the common variety and the Hsiaoshan, (蕭山種), the former being larger, but the Hsiaoshan breed are better layers, about 150 eggs a year. Turkeys are bred at Tinghai and its vicinity. It is said that during the Opium War the British troops brought some live turkeys to Tinghai, and from these birds the present annual production of over 30,000 Turkeys has been bred.

Chuchi, Yüyao and Linhai take the lead in raising chickens. In Chuchi the annual production amounts to 2,000,000, while at Yüyao and Linhai the annual figure varies from 400,000 to 650,000 the total annual production of chicken in the whole Province is estimated at 15,740,000, valued at over $2,759,800. Wuhsing, P'inghu, P'ingyang and Ninghsien are famous for ducks, the annual production totalling 300,000, while for the whole Province the total amounts to 11,527,000. Geese are not very widely raised, the total production amounting only to 466,543. The total poultry production in Chekiang Province is put at 28,743,279, distributed as follows:—

	Chickens		Ducks		Geese		Total	
	Number	Value	Number	Value	Number	Value	Number	Value
Hangchow Municipality	52,380	$74,070	2,000	$2,400	140	$140	54,520	$76,610
Hanghsien	160,000	160,000	50,000	35,000	——	——	210,000	195,000
Haining	240,000	192,000	10,000	6,000	——	——	250,000	198,000
Fuyang	175,000	87,500	30,000	13,500	15,000	13,500	220,000	114,500
Yühang	20,200	12,120	10,700	6,420	5,900	4,572	36,800	23,112
Linan	5,000	5,000	2,000	1,000	500	750	7,500	6,750
Yüch'ien	——	——	——	——	——	——	——	——
Hsinteng	72,000	50,400	9,000	6,300	——	——	81,000	56,700
Ch'anghua	60,000	120,000	600	1,200	——	——	60,600	121,200
Chiahsing	300,000	300,000	20,000	160,000	——	——	320,000	460,000
Chiashan	80,000	64,000	10,000	12,000	——	——	90,000	76,000
Haiyen	6,084	4,867	6,372	5,098	484	484	12,940	10,449

	Chickens		Ducks		Geese		Total	
	Number	Value	Number	Value	Number	Value	Number	Value
Ts'ungteh	80,000	$64,000	80,000	$72,000	—	—	160,000	$136,000
P'inghu	1,200,000	600,000	200,000	160,000	—	—	1,400,000	760,000
T'unghsiang	150,000	75,000	2,000	1,200	—	—	152,000	76,200
Wuhsing	480,000	346,000	300,000	150,000	—	—	780,000	496,000
Ch'anghsing	320,000	160,000	—	—	—	—	320,000	160,000
Tehts'ing	119,340	59,670	50,600	25,300	—	—	169,940	84,970
Wuk'ang	67,630	67,630	20,163	20,163	212	$318	88,005	88,111
Anchi	72,000	64,800	18,000	14,400	2,300	4,600	92,300	83,800
Hsiaofeng	40,000	24,000	15,000	6,000	—	—	55,000	30,000
Ninghsien	50,000	1,000,000	100,000	60,000	30,000	60,000	180,000	220,000
Ts'uch'i	20,000	20,000	50,000	40,000	100,000	200,000	170,000	260,000
Fenghua	71,000	71,000	30,000	27,000	—	—	101,000	98,000
Chenhai	10,000	10,000	6,000	6,000	—	—	16,000	16,000
Tinghai	180,000	405,000	90,000	63,000	60,000	72,000	330,000	540,000
Hsiangshan	323,410	258,728	8,945	5,367	34,629	34,629	366,984	298,724
Nant'ien	22,500	18,000	3,000	6,000	500	700	26,000	24,700
Shaohsing	129,500	93,030	33,000	19,800	31,380	31,380	193,880	144,210
Hsiaoshan	280,000	280,000	145,000	72,500	2,300	4,600	427,300	357,100
Chuchi	2,000,000	1,600,000	200,000	140,000	50,000	56,000	2,250,000	1,796,000
Yüyao	650,000	715,000	35,000	35,000	10,000	15,000	695,000	765,000
Shangyü	120,000	69,000	—	—	—	—	120,000	96,000
Ch'enghsien	300,000	180,000	10,000	6,000	1,000	2,000	311,000	188,000

	Chickens		Ducks		Geese		Total	
	Number	Value	Number	Value	Number	Value	Number	Value
Hsinch'ang	——	——	3,900	$3,900	3,000	$3,500	6,900	$7,400
Linhai	647,730	$259,092	59,000	413,000	3,000	6,000	709,730	678,092
Huangyen	210,000	168,000	75,000	60,000	1,200	1,200	286,200	229,200
Ninghai	345,000	172,500	60,000	24,000	300	600	395,300	197,100
Wenling	50,000	20,000	60,000	24,000	800	800	110,800	44,800
T'ient'ai	284,480	113,792	27,000	11,700	1,400	630	312,880	126,122
Hsienchü	217,600	108,800	20,750	10,475	——	——	238,350	119,275
Chinhua	177,500	88,750	35,300	12,650	7,900	7,900	220,700	109,300
Lanch'i	480,000	288,000	60,000	42,000	——	——	540,000	330,000
Tungyang	300,000	120,000	60,000	24,000	——	——	360,000	144,000
Iwu	198,000	94,500	9,000	4,500	——	——	198,000	99,000
Yungk'ang	80,000	48,000	10,000	4,000	——	——	90,000	52,000
Wui	45,000	18,000	20,000	10,000	——	——	65,000	28,000
P'ukiang	160,000	80,000	——	——	——	——	160,000	80,000
T'angch'i	35,014	17,507	9,398	4,699	190	190	44,602	22,396
Chühsien	351,000	351,000	70,000	35,000	9,538	9,538	430,538	39,538
Lungyu	50,000	50,000	20,000	20,000	——	——	70,000	70,000
Kiangshan	63,000	50,400	6,000	3,600	5,000	7,500	74,000	61,500
Ch'angshan	60,000	48,000	2,000	1,200	——	——	62,000	49,200
K'aihua	35,520	20,416	23,800	14,280	1,400	2,100	60,720	36,796
Chienteh	60,000	30,000	——	——	——	——	60,000	30,000
Shunan	120,000	60,000	1,500	750	——	——	121,500	60,750

	Chickens		Ducks		Geese		Total	
	Number	Value	Number	Value	Number	Value	Number	Value
Ts'ungteh	80,000	$64,000	80,000	$72,000	——	——	160,000	$136,000
P'inghu	1,200,000	600,000	200,000	160,000	——	——	1,400,000	760,000
T'unghsiang	150,000	75,000	2,000	1,200	——	——	152,000	76,200
Wuhsing	480,000	346,000	300,000	150,000	——	——	780,000	496,000
Ch'anghsing	320,000	160,000	——	——	——	——	320,000	160,000
Tehts'ing	119,340	59,670	50,600	25,300	——	——	169,940	84,970
Wuk'ang	67,630	67,630	20,163	20,163	212	$318	88,005	88,111
Anchi	72,000	64,800	18,000	14,400	2,300	4,600	92,300	83,800
Hsiaofeng	40,000	24,000	15,000	6,000	——	——	55,000	30,000
Ninghsien	50,000	1,000,000	100,000	60,000	30,000	60,000	180,000	220,000
Ts'uch'i	20,000	20,000	50,000	40,000	100,000	200,000	170,000	260,000
Fenghua	71,000	71,000	30,000	27,000	——	——	101,000	98,000
Chenhai	10,000	10,000	6,000	6,000	——	——	16,000	16,000
Tinghai	180,000	405,000	90,000	63,000	60,000	72,000	330,000	540,000
Hsiangshan	323,410	258,728	8,945	5,367	34,629	34,629	366,984	298,724
Nant'ien	22,500	18,000	3,000	6,000	500	700	26,000	24,700
Shaohsing	129,500	93,030	33,000	19,800	31,380	31,380	193,880	144,210
Hsiaoshan	280,000	280,000	145,000	72,500	2,300	4,600	427,300	357,100
Chuchi	2,000,000	1,600,000	200,000	140,000	50,000	56,000	2,250,000	1,796,000
Yüyao	650,000	715,000	35,000	35,000	10,000	15,000	695,000	765,000
Shangyü	120,000	69,000	——	——	——	——	120,000	96,000
Ch'enghsien	300,000	180,000	10,000	6,000	1,000	2,000	311,000	188,000

	Chickens		Ducks		Geese		Total	
	Number	Value	Number	Value	Number	Value	Number	Value
Hsinch'ang	——	——	3,900	$3,900	3,000	$3,500	6,900	$7,400
Linhai	647,730	$259,092	59,000	413,000	3,000	6,000	709,730	678,092
Huangyen	210,000	168,000	75,000	60,000	1,200	1,200	286,200	229,200
Ninghai	345,000	172,500	60,000	24,000	300	600	395,300	197,100
Wenling	50,000	20,000	60,000	24,000	800	800	110,800	44,800
T'ient'ai	284,480	113,792	27,000	11,700	1,400	630	312,880	126,122
Hsienchü	217,600	108,800	20,750	10,475	——	——	238,350	119,275
Chinhua	177,500	88,750	35,300	12,650	7,900	7,900	220,700	109,300
Lanch'i	480,000	288,000	60,000	42,000	——	——	540,000	330,000
Tungyang	300,000	120,000	60,000	24,000	——	——	360,000	144,000
Iwu	198,000	94,500	9,000	4,500	——	——	198,000	99,000
Yungk'ang	80,000	48,000	10,000	4,000	——	——	90,000	52,000
Wui	45,000	18,000	20,000	10,000	——	——	65,000	28,000
P'ukiang	160,000	80,000	——	——	——	——	160,000	80,000
T'angch'i	35,014	17,507	9,398	4,699	190	190	44,602	22,396
Chühsien	351,000	351,000	70,000	35,000	9,538	9,538	430,538	39,538
Lungyu	50,000	50,000	20,000	20,000	——	——	70,000	70,000
Kiangshan	63,000	50,400	6,000	3,600	5,000	7,500	74,000	61,500
Ch'angshan	60,000	48,000	2,000	1,200	——	——	62,000	49,200
K'aihua	35,520	20,416	23,800	14,280	1,400	2,100	60,720	36,796
Chienteh	60,000	30,000	——	——	——	——	60,000	30,000
Shunan	120,000	60,000	1,500	750	——	——	121,500	60,750

	Chickens		Ducks		Geese		Total	
	Number	Value	Number	Value	Number	Value	Number	Value
T'unglu	400,000	$220,000	500	$300	50	$50	400,550	$220,350
Shuian	160,000	40,000	—	—	—	—	160,000	40,000
Shouch'ang	55,000	44,000	2,700	2,160	200	200	47,900	46,360
Fenshui	60,000	30,000	30,000	18,000	—	—	90,000	48,000
Yungchia	625,000	312,500	5,000	2,000	1,000	1,000	631,000	315,500
Juian	44,800	17,920	30,000	15,000	5,000	4,000	79,800	36,920
Lots'ing	700,000	280,000	14,000	70,000	—	—	84,000	350,000
P'ingyang	350,000	105,000	200,000	60,000	30,000	30,000	580,000	195,000
T'aishun	160,000	160,000	40,000	16,000	—	—	200,000	176,000
Yühuan	105,000	52,500	12,500	10,000	—	—	117,500	62,500
Lishui	140,000	70,000	25,000	12,500	1,600	3,200	166,600	85,700
Ts'ingt'ien	180,000	90,000	110,000	44,000	—	—	290,000	134,000
Chinyun	150,000	70,000	6,000	3,000	20,000	20,000	176,000	93,000
Sungyang	56,000	44,800	10,000	6,000	8,000	12,000	74,000	62,800
Shuich'ang	81,820	57,274	9,900	7,920	8,620	10,344	100,340	75,538
Lungch'uan	154,000	184,800	7,600	4,560	5,200	7,800	166,800	197,160
Ch'ingyuan	69,000	78,000	70,000	56,000	3,000	6,000	142,000	140,000
Yunho	82,800	74,520	1,000	600	200	200	84,000	75,320
Hsuanp'ing	260,000	260,000	1,200	1,200	600	600	261,800	261,800
Chingning	70,000	84,000	—	—	—	—	70,000	84,000
Total	15,749,308	$2,759,886	11,527,428	$2,246,642	466,543	$636,025	28,743,279	$14,642,553

DISTRIBUTION

Beside meeting local requirements chickens, ducks and geese are exported to Shanghai, Hangchow, Ninghsien, Shaohsing, and Yungchia from different districts. Local sales amount to 14,962,248 birds, while for outside markets the total is about 4,454.649, details being shown in the following table:

	Chickens		Ducks		Geese		Total	
	Local	Outside	Local	Outside	Local	Outside	Local	Outside
Hangchow Municipality	52,380	——	2,000	——	140	——	54,520	——
Hanghsien	1,000,000	60,000	30,000	20,000	——	——	130,000	80,000
Haining	160,000	80,000	20,000	——	——	——	180,000	80,000
Fuyang	175,000	——	30,000	——	15,000	——	220,000	——
Yühang	20,200	——	10,700	——	5,900	——	36,800	——
Linan	3,000	2,000	1,500	500	300	200	4,800	2,700
Yüch'ien	——	——	——	——	——	——	——	——
Hsinteng	72,000	——	9,000	——	——	——	81,000	——
Ch'anghua	80,000	——	600	——	——	——	80,600	——
Chiahsing	200,000	100,000	20,000	——	——	——	220,000	100,000
Chiashan	60,000	20,000	10,000	——	——	——	70,000	20,000
Haiyen	6,084	——	6,372	——	484	——	12,940	——
Ts'ungteh	80,000	——	80,000	——	——	——	160,000	——
P'inghu	600,000	600,000	100,000	100,000	——	——	700,000	700,000
Tunghsiang	50,000	100,000	2,000	——	——	——	52,000	100,000

	Chickens		Ducks		Geese		Total	
	Local	Outside	Local	Outside	Local	Outside	Local	Outside
Wuhsing	250,000	230,000	130,000	170,000	—	—	380,000	400,000
Ch'anghsing	220,000	—	—	—	—	—	320,000	—
Tehts'ing	119,340	—	50,600	—	—	—	169,940	—
Wuk'ang	40,000	27,630	10,000	10,163	212	—	50,212	37,793
Anchi	72,000	—	18,000	—	3,300	—	92,300	—
Hsiaofeng	45,000	—	20,000	—	—	—	65,000	—
Ninghsien	50,000	—	100,000	—	30,000	—	180,000	—
T's uch'i	20,000	—	50,000	—	100,000	—	170,000	—
Fenghua	71,000	—	30,000	—	—	—	101,000	—
Chenhai	10,000	—	6,000	—	—	—	16,000	—
Tinghai	15,000	30,000	90,000	—	60,000	—	300,000	30,000
Hsiangshan	170,000	153,410	8,945	—	34,629	—	213,574	153,410
Nant'ien	15,300	7,200	600	2,400	200	300	16,100	9,900
Shaohsing	232,200	—	77,400	—	107,500	—	417,100	—
Hsiaoshan	280,000	—	145,000	—	2,300	4,600	427,300	4,600
Chuchi	2,000,000	—	100,000	100,000	50,000	—	2,150,000	100,000
Yüyao	350,000	300,000	25,000	10,000	5,000	5,000	380,000	315,000
Shangyü	120,000	—	—	—	—	—	120,000	—
Ch'enghsien	100,000	200,000	70,000	—	1,000	—	171,000	200,000
Hsinch'ang	—	—	3,900	—	3,000	—	6,900	—
Linhai	300,000	347,730	20,000	39,000	3,000	—	333,000	386,730

	Chickens		Ducks		Geese		Total	
	Local	Outside	Local	Outside	Local	Outside	Local	Outside
Huangyen	150,000	60,000	75,000	——	400	800	225,400	60,800
Ninghai	300,000	45,000	30,000	30,000	300	——	330,300	75,000
Wenling	50,000	——	60,000	——	800	——	110,800	——
T'ient'ai	284,480	——	27,000	——	1,400	——	312,880	——
Hsienchü	217,600	——	14,750	6,000	——	——	232,350	6,000
Chinhua	177,500	——	35,300	——	7,900	——	220,700	——
Lanch'i	480,000	——	60,000	——	——	——	540,000	——
Tungyang	240,000	60,000	20,000	40,000	——	——	260,000	100,000
Iwu	100,000	89,000	9,000	——	——	——	109,000	89,000
Yungk'ang	80,000	——	4,500	5,500	——	——	84,500	5,500
Wui	45,000	——	20,000	——	——	——	65,000	——
P'ukiang	127,000	33,000	——	——	——	——	127,000	——
T'angch'i	35,014	——	9,398	——	190	——	44,602	——
Chühsien	68,000	283,000	2,000	68,000	9,538	——	79,538	351,000
Lungyu	40,000	10,000	10,000	10,000	——	——	50,000	20,000
Kiangshan	63,000	——	6,000	——	5,000	——	74,000	——
Ch'angshan	60,000	——	2,000	——	——	——	62,000	——
K'aihua	35,520	——	23,800	——	1,400	——	60,720	——
Chienteh	60,000	——	——	——	——	——	60,000	——
Shunan	120,000	——	1,500	——	——	——	121,500	——
T'unglu	400,000	——	500	——	——	50	400,500	50

	Chickens		Ducks		Geese		Total	
	Local	Outside	Local	Outside	Local	Outside	Local	Outside
Shuian	60,000	100,000	—	—	—	—	60,000	100,000
Shouch'ang	55,000	—	2,700	—	—	—	57,900	—
Fenshui	60,000	—	30,000	—	—	—	90,000	—
Yungchia	625,000	—	5,000	—	1,000	—	631,000	—
Juian	44,800	—	30,000	—	5,000	—	79,800	—
Lots'ing	300,000	400,000	70,000	70,000	—	—	370,000	470,000
P'ingyang	200,000	150,000	100,000	100,000	20,000	10,000	320,000	260,000
T'aishun	160,000	—	40,000	—	—	—	200,000	—
Yühuan	70,000	35,000	8,332	4,166	—	—	78,332	39,166
Lishui	894,000	—	25,000	—	1,600	—	920,600	—
Ts'ingt'ien	180,000	—	110,000	—	—	—	290,000	—
Chinyun	100,000	50,000	2,000	4,000	20,000	—	122,000	54,000
Sungyang	56,000	—	10,000	—	8,000	—	74,000	—
Shuicn'ang	81,820	—	9,900	—	8,620	—	100,340	—
Lungch'uan	154,000	—	7,600	—	5,200	—	166,800	—
Ch'ingyuan	69,000	—	70,000	—	3,000	—	142,000	—
Yunho	82,800	—	2,000	—	500	—	85,300	—
Hsuanp'ing	180,000	80,000	1,200	—	600	—	181,800	80,000
Chingning	70,000	—	—	—	—	—	70,000	—
Total	12,229,038	3,652,970	2,211,597	789,729	521,613	11,950	14,962,248	4,454,649

BOOK SIX

MINING

CHAPTER 1

INTRODUCTION

CHEKIANG is a province full of mining possibilities. Out of the 75 *hsien* mineral deposits of some kind have been reported in 61, and in the remaining 14 *hsien* minerals are either entirely absent or have not yet been discovered. Beds of ore already located include iron, molybdenum, manganese, antimony, silver, zinc, copper, tin, cobalt, and placer gold, while non-metallic deposits consist of salt, fluorite, alum, pyrophyllite, graphite, crystal, coal, bituminous shale, and limestone. Details of distribution follow:—

	Metallic Deposits	Non-metallic Deposits
Hanghsien	Iron and manganese	Lime stone
Haining	———	Graphite, fluorspar, & salt
Fuyang	Lead, placer gold, zinc-blende, & sphalerite-galena	Lime stone and coal
Yühang	Manganese, lead and iron	Lime stone, salt & red clay
Linan	Iron	———
Yüch'ien	———	Coal
Hsinteng	———	Lime stone and coal
Ch'anghua	Manganese, lead and antimony	Kaolin, pyrophyllite fluorite and graphite
Haiyen	———	Salt
P'inghu	———	Salt
Wuhsing	———	Coal, lime stone, red clay, white clay, crystal and fluorite
Ch'anghsing	Iron	Coal, lime stone and kaolin
Wuk'ang	Copper	———
Ninghsien	———	Salt and coal
Ts'uch'i	———	Salt and coal
Fenghua	Sphalerite-galena	———
Chenhai	Lead	Salt
Tinghai	Iron	Salt, coal and yellow sand

	Metallic Deposits	Non-metallic Deposits
Hsiangshan	Silver, copper, iron and lead	Fluorite, yellow sand, and salt
Shaohsing	———	Lime stone, salt & clay
Hsiaoshan	———	Lime stone, kaolin and salt
Chuchi	Iron, lead, silver, manganese, placer gold, and zincblende	Coal, lime stone, coal, yellow sand, fluorite, and clay
Yüyao	———	Salt
Shangyü	———	Salt
Ch'enghsien	Manganese	Fluorspar
Hsinch'ang	———	Fluorite and coal
Linhai	Copper, manganese, & iron	Salt
Ninghai	Iron, silver, lead, and copper	Salt and coal
Wenling	———	Lime stone and salt
T'ient'ai	———	Coal
Chinhua	———	Fluorite, clay, kaolin, lime stone
Lanch'i	———	Coal and lime stone
Tungyang	Sphalite-galena and cobalt	Kaolin and graphite
Iwu	Manganese & silver	Fluorite and coal
Wui	———	Fluorite
P'ukiang	Silver, galena - sphalerite-chalcopyrite	Coal and fluorite
T'angch'i	Silver	———
Ch'ühsien	Zincblende, lead, and placer gold	Coal
Lungyu	———	Fluorite and coal
Kiangshan	Cobalt	Fluorite, coal and crystal
Ch'angshan	Iron	Fluorite pyrophyllite, coal, & bituminous shale
K'aihua	Antimony, placer gold, tin, iron, galena-sphalerite-chalcopyrite	———
Shunan	Iron and copper	Lime stone, coal, and bituminous shale
T'unglu	———	Coal and lime stone
Shuian	Antimony and lead	———
Shouch'ang	Silver, iron, copper, & tin	———
Fenshui	———	Bituminous shale

	Metallic Deposits	Non-metallic Deposits
Yungchia	Galena-sphalerite-chalcopyrite sphalerite-galena, molybdenum, manganese, iron, and placer gold	Pyrophyllite and clay
Juian	———	Salt
Lots'ing	Lead, and manganese	Salt
P'ingyang	Silver, manganese, and iron	Kaolin and alum
T'aishun	Manganese	———
Yühuan	Antimony and sphalerite-galena	Salt
Lishui	Iron and silver	Fluorite
Ts'ingt'ien	Galena-sphalerite-chalcopyrite, molybdenum, iron & silver	Pyrophyllite and fluorite
Chinyun	Iron	———
Sungyang	Copper and iron	———
Shuich'ang	Silver, iron, copper and tin	———
Lungch'uan	———	Kaolin, bituminous shale and glaze
Yunho	Iron	———
Hsuanp'ing	Iron and silver	———

Classified by minerals, the distribution is shown in the following table:—

Mineral	Hsien
Iron	Ch'anghsing, Chienteh, Hanghsien, Linan. Yühang, Ts'ingt'ien, Ninghai, Shunan, Hsiangshan, Shuich'ang, Linhai, Chinyun, Tinghai, Lishui, Yunho, Hsuanp'ing, Juich'ang, P'ingyang, Sungyang, Chuchi, Ch'angshan, and K'aihua.
Molybdenum	Ts'ingt'ien and Yungchia
Manganese	T'aishun, Lots'ing, Ch'anghua, Linhai, Iwu, Yungchia and Ch'enghsien.
Antimony	Shunan, Shuian, K'aihua, Ch'anghua and Yühuan.
Silver	Hsuanp'ing, Lishui, Ts'ingt'ien, T'angch'i, Ch'angshan, Ninghai, P'ingyang, Iwu, Hsiangshan, Chuchi, Shuich'ang, and P'ukiang.
Zincblende	Chuchi, Ch'ühsien, and Fuyang.

Mineral	Hsien
Sphalerite-galena	Yühuan, Yungchia, Fuyang, Tungyang, and Fenghua.
Lead	Ninghai, Chenhai, Shunan, Shuian, Hsiangshan, Shouch'ang, Chuchi, Ch'ühsien, Fuyang, Ch'anghua, Lots'ing, and Yühang.
Galena-chalcopyrite-sphalerite	Yungchia, Ts'ingt'ien, K'aihua, P'ukiang and Shunan.
Copper	Wuk'ang, Sungyang, Shuich'ang, Chienteh, Hsiangshan, Linhai, and Ninghai.
Tin	Shuich'ang, Yungchia, and K'aihua.
Cobalt	Kiangshan and Tungyang.
Placer Gold	Ch'ühsien, Chuchi, Shunan, Fuyang, Yungchia, and K'aihua.
Salt	Haining, Haiyen, P'inghu, Hsiaoshan, Yühang, Shaohsing, Shangyü, Yüyao, Chenhai, Ninghsien, Tinghai, Hsiangshan, Ninghai, Linhai, Wenling, Lots'ing, Yühuan, P'ingyang, Juian, and Ts'uch'i.
Coal	Kiangshan, Shouch'ang, Chühsien, Iwu, Chuchi, Ch'anghsing, Ch'angshan, Lanch'i, Ninghai, Chienteh, Tinghai, T'ient'ai, Ninghsien, Hsinteng, Hsinch'ang, Yüch'ien, T'unglu and Wuhsing.
Fluorite	Chinhua, Iwu, Wui, Ts'ingt'ien, Lishui, Ch'enghsien, Hsinch'ang, Hsiangshan, Wuhsing, Chuchi, Ch'angshan, Kiangshan, P'ukiang, Ninghai, Ch'anghua and Lungyu.
Alum	P'ingyang.
Pyrophyllite	Ts'ingt'ien, Yungchia, Ch'anghua, and Ch'angshan.
Graphite	Ninghai, Ch'anghua, Shouch'ang and Tungyang.
Crystal	Kiangshan and Wuhsing.
Bituminous shale	Chienteh, Ch'angshan, Lungyu, Fuyang, Fenshui, Shunan, Lungch'uan, P'ukiang, Lanch'i, and Chuchi.
Clay	Lungch'uan, P'ingyang, Yungchia, Tungyang, Ch'anghua, Hsiaoshan, Yühang and Wuhsing.
Kaolin	Chinhua, Ch'anghsing, Chuchi, Shaohsing and T'such'i.
Limestone	Hanghsien, Wühang, Fuyang, Hsinteng, T'unglu, Chienteh, Lanch'i, Chinhua, Chuchi, Hsiaoshan, Shaohsing, Wenling, Ch'anghsing and Wuhsing.

The total number of known mineral deposits in the Province is 443, of which 102 are in operation, 198 are suspended after a short period of operation, and 143 have not yet been worked. Of the 102 deposits which are now working only 34 are of metallic ores. The reason for this backward condition of the mining industry is lack of financial strength and inadequate means of communication. The following table shows the deposits of each mineral, together with their present condition:—

	Total Deposits	Suspended	Unworked	In Operation
Iron	67	29	34	4
Molybdenum	12	11	1	—
Manganese	21	9	12	—
Antimony	18	16	—	2
Silver	20	14	6	—
Zincblende	7	7	—	—
Sphalerite-galena	7	1	6	—
Lead	27	12	15	—
Galena-sphalerite-chalcopyrite.	13	7	6	—
Copper	8	1	7	—
Tin	7	1	6	—
Cobalt	2	—	—	2
Placer Gold	6	2	4	—
Salt	20	—	—	20
Coal	53	43	8	2
Fluorspar	86	40	30	16
Alum	1	—	—	1
Seal Stone	13	5	1	7
Graphite	5	—	5	—
Crystal	2	—	2	—
Bituminuous Shale	11	—	—	11
Clay	9	—	—	9
Kaolin	2	—	—	2
Lime stone	14	—	—	14
TOTAL	443	198	143	102

CHAPTER II

IRON

CHEKIANG is not an important iron-producing center, but like other mineral deposits, the extent of the possible reserves has never been estimated. According to a survey made in 1919 by the Geological Institute of the former Ministry of Agriculture and Commerce, the iron ore deposits in the Province amounted to 2,300,000 tons, but a survey by the Geological Institute of Kuangtung and Kuangsi Provinces put the total at 7,154,000 tons. An estimate prepared by the Provincial Geological Institute put the iron-ore deposits of the whole Province at over 80,000,000 metric tons, including 28,949 metric tons of pyrites, and 62,917,336 metric tons of magnetite. Owing to the poor quality of the ore so far located, and inadequate means of transportation, the number of iron deposits now in operation or which have been worked is very limited.

The iron deposits found in Chekiang Province are of four varieties, hematite, magnetite, iron sand (magnetite powder), and pyrites. Of the 22 *hsien* having iron deposits, six (Ch'anghsing, Chienteh, Hanghsien, Linan, Yühang and Ts'ingt'ien) are hematite, seven (Ninghai, Shunan, Hsiangshan, Shuich'ang, Linhai, Chinyun, and Tinghai) are magnetite, six (Ts'ingt'ien, Lishui, Yunho, Hsuanp'ing, Shuich'ang, and P'ingyang) are magnetite powder, and eight (Ts'ingt'ien, Lishui, Sungyang, Shuich'ang, Chuchi, Shuian, Ch'angshan, and Chienteh) are pyrites. Detailed distribution is tabulated as follows:

	Location	Estimated Reserve	Present Condition
Hematite	Kaowanshan (高灣山), Lüshanchen (呂山鎮); Ch'anghsing.	27,000 tons*	In operation
„	Lichiahsiang (李家巷), Ch'anghsing.	———	Suspended
„	Ts'ingshan (青山), Hop'ingchen (和平鎮); Ch'anghsing.	2,700 tons*	In operation
„	Chinniushan (金牛山), Ts'ingts'aowu (青草坞); Ch'anghsing.	2,700,000 tons	„ „
„	T'uwangtung (土王洞), Peitawu (北大坞); Ch'anghsing.	900,000 tons	„ „
„	Mifengtung (蜜蜂洞), T'iehkungshan (鐵弓山); Ch'anghsing.	Nearly exhausted	„ „
„	P'ailungtung (白龍洞), Ch'enchiaots'un (陳橋村); Ch'anghsing.	———	„ „
„	T'iehkuantsing (鐵冠井), Chinniushan; Ch'anghsing.	13,000 tons*	Suspended
„	Heilungtung (黑龍洞), Chinniushan: Ch'anghsing.	———	„
„	Houshan (後山), West T'ungkuants'un (西銅關村); Chienteh.	———	„
„	T'iehshanwu (鐵山坞) and Shawan (下灣), East Tungkuantsun, Chienteh.	———	„

*Visible.

	Location	Estimated Reserve	Present Condition
Hematite	Chuchiaotsun (褚橋村), Hanghsien.	———	Not yet worked
"	Nanhsiang (南鄉), Linan.	———	" " "
"	Soniwu (索泥塢), Ert'ienmen (二天門); Yühang.	———	" " "
"	Yingp'anshan (營盤山), Hsienlinpu (閑林埠); Yühang.	———	" " "
"	Shengt'angling (聖塘嶺), Hsienlinpu; Yühang.	———	" " "
"	Wuch'aoshan (午潮山), Hsienlinpu; Yühang.	———	" " "
"	Huanglienk'eng (黃連坑), Changshan (章山); Ts'ingt'ien.	———	" " "
"	Wulungshan (烏龍山), Huants'un (湖岸村); Ts'ingt'ien.	———	" " "
"	T'ienhsienlung (天仙嚨), Lintoutsun (嶺頭村); Ts'ingt'ien.	———	" " "
Magnetite	Hsuangchienshan (雙尖山), Jenchiats'un (任家村); Ninghai.	———	" " "
"	Chiehp'aishan (界牌山), Shunan.	480,000 tons*	" " "
"	Ch'enshan (陳山), Paitunts'un (白墩村); Hsiangshan.	400,000 tons*	Suspended
"	Chilingtou (治嶺頭) and Kuchuling (苦朱嶺), Chichungchu (資忠區); Shuichang.	———	"
"	Hsitiehshan (西疊山), Linhai.	———	Not yet worked
"	Chinyun.	———	" " "
"	Hsinanhsiang (西南鄉), Tinghai.	———	" " "

*Visible

	Location	Estimated Reserve	Present Condition
Magnetite powder	Shihchitu (十七都), Ts'ingt'ien.	——	Suspended
" "	Huangwuk'ou (黃沃口), Ssuneitu (四內都); Ts'ingt'ien.	——	"
" "	Tishuiyen (滴水岩), Lishui.	——	In operation
" "	Chungt'ouchieh (踵頭街), Wutu (五都); Yunho.	——	" "
" "	Chinshuit'an (緊水灘), Shantu (三都); Yunho.	——	" "
" "	Tats'aits'un (大柴村), Hsuanp'ing.	——	" "
" "	Niut'oushan (牛頭山), and Yuankungshan (源公山) Chichungchu; Tungyang.	——	Suspended
" "	Nei-t'ao-yuan-hua-chien (內桃源花尖) Shuich'ang.	——	"
" "	Waichuyunfan (外株運販) Chientehchü (建德區); Shich'ang.	——	"
" "	Chungch'iao (崇家喬), P'ingyang.	——	Not yet worked
" "	Meit'ing (美亭), P'ingyang.	——	" " "
" "	Chiaohaiwan (蹺海灣), P'ingyang.	——	" " "
" "	Chaochi (皂溪), P'ingyang.	——	" " "
" "	Taihu (苔湖), P'ingyang.	——	" " "
Pyrites	Payuanchiushan (八源邱山), Luwaitu (六外都); Ts'ingt'ien.	6,000 metric tons	Suspended
"	Ts'aits'un (柴村), Shichitu (十七都); Ts'ingt'ien.	1,100 metric tons	Not yet worked
"	Wanghukang (望湖崗), Tsaitsun; Ts'ingt'ien.	1,100 metric tons	" " "
"	Laokoufanshan (老鍋飯山), Shiwutu (十五都); Ts'ingt'ien.	7,500 metric tons	" " "

	Location	Estimated Reserve	Present Condition
Pyrites	T'ienhsienlung (天仙壠), Ch'itu (七都); Ts'ingt'ien.	4,800 metric tons	Suspended
"	Wanghui (王垵), Shichitu; Ts'ingt'ien.	9,000 metric tons	Not yet worked
"	Kuank'eng (古安坑), Itu (一都); Ts'ingt'ien.	———	" " "
"	Tashitung (打石洞), Maoyueh (毛月); Ts'ingt'ien.	———	" " "
"	Chimakang (騎馬崗), Sungyang.	———	" " "
"	Chuk'eng (珠坑), Chichungchü; Sungyang.	———	" " "
"	Hengt'an (橫壇), Sungyang.	———	" " "
"	Chikangling (青崗嶺), Chilintou, Shuich'ang.	———	Suspended
"	Yangmuyuan (洋母源), Paohsinchu (保信厝); Shuich'ang.	———	"
"	K'uchulin (苦朱嶺), Chilintou; Shuich'ang.	———	"
"	Chilint'ou, Chichungchü; Shuich'ang.	———	"
"	Lungyent'ou (龍岩頭), Chichungchü; Shuich'ang.	———	"
"	Shaochiawu (邵家坞), Panchiatsun (潘家村); Shuich'ang.	———	"
"	Hungllinwu (洪領坞), Shishantu (十三都); Chuchi.	———	"
"	Shiwutu (十五都), Chuchi.	———	"
"	Yangch'ichen (洋溪鎮), Chienteh.	———	Not yet worked
"	Taoshut'ing (桃樹淨), Chitu (七都); Ch'angshan.	———	" " "
"	Yehk'eng (葉坑) and Shunshan (舜山), K'aihua.	———	" " "
"	Tachipien (大溪邊), K'aihua.	———	" " "
"	Waichiti (外際底), Kaihua.	———	" " "
"	Tipen (底本) & Hsiehchialing (薛家嶺), K'aihua.	———	" " "

HEMATITE DEPOSITS

The most important hematite deposits are found in Ch'anghsing and Chienteh. In Ch'anghsing the deposits at Chinniushan (金牛山) and T'uwangtung (土王洞) are the richest, with those in Kaowanli (高灣里) and Ts'ingshan (青山) next in importance, while those at Mifengtung (蜜蜂洞) and Pailungtung (白龍洞) are nearly exhausted. In Chienteh the hematite deposits are concentrated on T'ungkuan hill (銅官山), where the richest beds are found in T'ungshanwu (銅山塢), T'iehshanwu (鐵山塢) and Hsiawan (下灣).

The chief route for transporting Ch'anghsing ore is the Nanking-Hangchow National Highway, while that for Chienteh supplies is the Hsinan River (新安江, also known as Huikiang 徽江), which can be navigated from Chienteh by junks to T'unglu, whence steam-launches are available to carry the ore to Hangchow.

Analysis of the hematite ores obtained from various deposits gives the following results:—

		Fe	SiO_2	S	P	Al_2O_3	Cu	Mn	CaO	MgO	Loss in Calcination
Ch'anghsing:											
Lichiahsiang	(李家巷)	63.22	2.65	0.07	Trace	——	——	0.42	——	——	——
Lüshanchen	(呂山鎮)	57.30	1.80	0.26	0.55	1.16	——	——	0.30	0.24	13.85
Hop'ingchen	(和平鎮)	59.68	0.60	0.07	1.34	1.87	——	——	——	0.45	0.60
Ts'ingts'aowu	(青草塢)	50.10	5.05	0.08	0.01	4.68	——	——	——	——	13.20
Peitawu	(北大塢)	60.06	2.30	0.11	0.05	0.25	——	——	0.35	——	2.26
Tiehliaoshan	(鐵丁山)	50.12	15.64	0.09	0.02	2.84	——	——	——	——	9.30
Chenchiaotsun	(陳橋村)	56.40	7.60	0.02	0.65	0.46	——	——	——	——	0.60

		Fe	SiO_2	S	P	Al_2O_3	Cu	Mn	CaO	Mg_2O	Loss in Calcination
Chienteh:											
T'ungshanwu	(銅山塢)	63.76	2.00	0.19	0.0027	5.0	—	—	—	—	1.12
T'iehshanwu	(鐵山塢)	67.10	2.40	0.08	0.0022	1.12	—	—	—	—	—
Pishan	(碧山)	68.80	1.15	0.14	0.0022	—	—	—	—	—	—
Hsiawan Tuian	(下灣對岸)	46.25	28.35	0.20	0.0033	0.50	—	—	—	—	3.50
Hsiawan	(下灣)	53.92	7.20	0.34	0.018	1.85	0.46	—	—	—	12.0
Hanghsien:											
Chuchiaots'un	(諸橋村)	56.96	2.80	—	—	—	—	0.62	—	—	—
Linan:.											
Nanhsiang	(南鄉)	45.05 55.08	3.60 15.35	0.21	0.38	0.56	—	0.13	—	—	16.80
Yühang:											
Ert'ienmen	(二天門)	46.20	13.00	0.10	0.58	8.44	—	—	—	—	12.30
Hsienlinchen	(閑林鎮)	60.65	6.5	—	0.13	2.00	—	0.12	—	—	4.00
Hsienlinpu	(閑林埠)	50.38	13.34	1.58	0.15	—	—	0.54	—	—	—

MAGNETITE DEPOSITS

The most important magnetite deposits in the Province are found in Shuangkuangshan (雙光山) of Jenchiats'un (任家村), Ninghai; Chiehpaishan (界牌山) of Shunan; and Chilint'ou (治嶺頭) and Kuchulin (苦朱嶺) of Tunghsiang (東鄉), Shuich'ang. Deposits of comparatively small size are also found in Hsiangshan, Linhai, and Tinghai.

Only two deposits have been worked, at Hsiangshan and Shuich'ang, but owing to lack of experience and capital operations have been suspended at both places. The chemical composition of samples which have been analyzed is as follows:—

	Fe	SiO_2	Mn	P	S	Loss in Calcination
Jenchiatsun, Ninghai (任家村)	54.32 56.05	13.40	0.35	0.09	0.07	—
Tunghsiang, Shunan (東鄉)	51.32	22.50	—	0.07	0.25	4.15
Tsuchungch'ü, Shuich'ang (資志院)	41.05	30.50	—	0.03	0.52	—

MAGNETITE POWDER DEPOSITS

Lishui is the most important center for magnetite powder. In former days the market for Lishui (then known as Chuchow 處州) iron, chiefly made from magnetite, extended as far as Fukien and Anhui. The ore is usually found along mountain streams and around lakes and is obtained by washing ore-bearing mud in a wooden trough, the daily yield varying from 30 catties (20 *liang* to one catty) to 100 catties. The average value is $0.458 per 100 catties, so that if the average daily output of a worker is put at 65 catties, his earning would amount to about 32 cents daily.

The iron content of magnetite powder varies in different localities, analysis giving the following results:—

	% of Iron
Ts'ingt'ien	11.6
Lishui	13.2
Yunho	9.7-67.3
Hsuanp'ing	9.7
P'ingyang	46.3

The ore is sold to local refineries, where very primitive methods are employed. The output of each furnace in 12 hours is 240 catties, and to obtain this result about 500 catties of ore and 350 catties of charcoal are required. The iron is moulded in "pigs" about six centimeters long, 4½ centimeters wide, and one centimeter thick. Refining is continued day and night, and six workers are required to attend one furnace, their daily wages amounting to 50 cents, with food.

Pig iron is further refined into wrought iron, out of every 100 catties 90 being obtained. Six are required to attend to one furnace, and for every 60 catties of wrought iron each man gets 12 cents.

Taking conditions of Yunho as an example, the cost of producing 100 catties of pig iron is $5.02, as follows:—

Magnetite powder (500 catties)	$2.50
Charcoal (350 catties)	5.40
Wages	1.50
Food for workers	1.20
Hire of furnace	0.80
Transportation	1.15
	$12.05 (240 catties)

The cost of producing 60 catties of wrought iron is $3.984, particulars being as follows:—

Pig iron (100 catties)	$5.02
Charcoal (30 catties)	0.46
Wages	0.18
Food for workers	0.12
Hire of furnace	0.20
Total	$5.98 (90 catties)

Owing to the keen competition of imported products, the output of iron in Chekiang Province has been greatly reduced. In Yunho, for example, the yearly output has dwindled from 60,000 piculs (60 catties to one picul) to about 2,000 piculs.

PYRITE DEPOSITS.

Though iron pyrites are found at Ts'ingt'ien, Lishui, Sungyang, Shuich'ang, Chuchi, Chienteh, Ch'angshan and K'aihua, only those at Ts'ingt'ien and Shuich'ang have been worked. The deposit at Chihlingt'ou (治嶺頭), Shuich'ang, was worked several centuries ago, and judging by appearances about 2,000 tons of ore have been removed. Owing to high transportation charges, no attempt has been made to resume working.

Pyrites countain large quantities of sulphur and red alum. The process of extracting sulphur is first to reduce the ore to powder, which is placed in an earthenware jar, sealed, and then placed upside down over an empty jar. Heat is then applied to the upper jar until the sulphur content is expelled into the jar below, cold water being constantly sprinkled over the latter in order to hasten

precipitation from the sulphur gas. Out of 100 catties of ore 20 catties of sulphur can be usually obtained. The process of extracting red alum is much simpler. The ore left after sulphur extraction is completed is left in a damp place for several years until it turns red in color, and red alum (Fe_2O_3) is then obtained after burning.

The cost of producing 100 catties of sulphur from pyrites is $35.20, particulars being as follows:—

Pyrites (1,400 catties)	$12.20
Earthen jars	12.50
Transportation	2.50
Fuel	2.50
Wages	3.50
Miscellaneous	2.00
Total	$35.20

The chemical composition of the pyrites found in Chekiang Province is as follows:—

	Fe	S	Mn	$Ca_3P_2O_8$	SiO_2	Residue
Payuanchiushan, Ts'ingt'ien (八源邱山)	25.09	15.06	—	—	—	46.00
T'saitsun (蔡村), Ts'ingt'ien	17.17	17.65	—	—	—	60.00
Wanghukang (望湖崗), Ts'ingt'ien						
Laokuofanshan, (老鍋飯山)	9.10	5.64	—	—	—	82.00
Ts'ingt'ien	44.80	43.12	—	—	—	7.00
T'ienhsienlung (天仙龍), Ts'ingt'ien	27.70	17.04	—	—	—	49.00
Wangao (王沃), Ts'ingt'ien	19.25	21.08	—	—	—	54.00
Tashihtung (打石洞), Lishui	4.90	5.24	—	—	—	88.00
Chimakang (騎馬崗), Sungyang	45.02	45.90	—	—	—	8.50
Shihwutu (十五都), Chuchi	38.58	42.71	—	—	—	5.58
Chinlingt'ou (治嶺頭), Shuich'ang	40.82	30.03	5.16	—	—	19.40
Shaochiawu (邵家塢), Shuich'ang	35.84	44.28	—	6.74	6.17	—

CHAPTER III

MOLYBDENUM

TS'INGT'IEN is the most important center for molybdenum ore in Chekiang Province, and the mineral is also reported in Yungchia and Chuchi. The following table shows the location of deposits so far discovered in Ts'ingt'ien *hsien*:—

Location		Present Condition
Hengk'engshan (橫坑山)	Shihp'ingch'uan (石平川)	Suspended
Suntungk'eng (孫硐坑)	Shihp'ingch'uan	"
Yaoyenshan (腰岩山)	Shihp'ingch'uan	"
Shanghengk'eng (上橫坑)	Huanghsiangts'un (黃垟村)	"
Hengk'engt'an (橫坑潭)	Huanghsiangts'un	Not yet worked
Waiyinshan (外陰山)	Huanghsiangts'un	Suspended
Ssuch'ushan (四柱山)	Huanghsiangts'un	"
Kuanyincholien (觀音坐蓮)	Lungt'an (龍潭)	"
Shuiniut'ang (水牛塘)	Tunghsiang (東鄉)	"
Chiangshank'eng (降山坑)	Hengk'eng (橫坑)	"

Two deposits have been discovered in Yungchia, one at Shihjanyuk'eng (石染魚坑) and the other at Tiehk'eng. (鐵坑). Both were being operated, but particulars of working are unknown.

All the Ship'ingch'uan deposits in Ts'ingt'ien were worked by the Chu Feng Company (聚豐公司), organized in 1917 with a capital of $40,000. A total of 50 men were employed, of whom 10 were borers and 40 attending to miscellaneous work. The borers were natives of Hupeh, while the other workers were recruited from neighboring

towns. The borers were paid $15 a month, and the general laborers $8, with free lodging but no board. Owing to reasons not ascertained, the company suspended operations in 1919.

The Shanghengk'eng deposit of Ts'ingt'ien was worked by the I Sheng Mining Company (義生公司), organized in 1918 with a capital of $20,000. After one year's operation the company was forced to close down, owing to inadequate means of communication and lack of capital. During the period of working over 40 piculs of molybdenum ore were shipped to Shanghai.

The chemical composition of the ore from Tsingt'ien is as follows:—

Sample from	Molybdenum	Lead	Sulphur	Iron	Insoluble Matter
Hengkangshan	3.42	0.34	3.34	—	94.30
Sungtungkang	7.67	trace	6.50	1.20	80.50

CHAPTER IV

MANGANESE

THE manganese producing area of Chekiang extends over Chuchi, Yühang, Ch'anghua, P'ingyang, Linhai, Hanghsien, T'aishun, Iwu, Lots'ing, Yungchia, and Ch'enghsien, particulars being as follows:—

Location	Present Condition
Chuchi:	
Shihmawu (石馬塢), Hsipehhsiang (西北鄉).	Suspended
Shanshant'ou (上山頭), Hsiashant'ou (下山頭), and Chinhsingshan (金星山), Wangchiawu (汪家塢).	〃
Lungshan (龍山), Hsianglushan (香爐山), and Wushan (烏山), Wushihhsiang (烏石鄉).	In operation
Yühang:	
Tungwushan (東塢山)	Suspended
Wuch'aoshan (午潮山), Ert'ienmen (二天門), and Sonishan (索泥山), Hsienlinpu (閑林埠).	Not yet worked
Lit'angwu (裏塘塢), Nanchienshangts'un (南建上村).	〃 〃 〃
Shengt'angling (聖塘嶺), Hsienlinpu.	〃 〃 〃
Sunchiak'eng (孫家坑).	〃 〃 〃
Muchiashan (牧家山).	〃 〃 〃
Tungchiashan (董家山).	〃 〃 〃
Hanghsien:	
Lungmenshan (龍門山), Ertu (二都).	Suspended
Lungmenk'eng (龍門坑) and Shaniwu (沙泥塢)	In operation
Wansungling (萬松嶺).	Not yet worked
P'ingyang:	
Yangpanling (陽牛嶺).	〃 〃 〃
T'aisnun:	
Yinchangk'ou (銀場口).	Suspended
Lots'ing.	
Wulungshan (五龍山), Titou (墈頭).	Not yet worked
Ch'anghua:	
Hoyangya (河陽壓) and Nichiulung (泥鰍壟), Chiutu (九都).	〃 〃 〃
Linhai:	
Chienyingts'un (前英村), Hsihsiang (西鄉).	〃 〃 〃
Iwu:	
Chinkangling (金剛嶺), Nanhsiang (南鄉).	〃 〃 〃
Yungchia:	
Tat'ang (大塘).	In operation
Ch'enghsien:	
Ant'angshan (安堂山), Ts'aitsuwants'un (柴子灣村)	〃 〃

Chemical analysis shows that very few of the manganese deposits so far discovered in the Province are of good quality, as most of the ore contains a high percentage of iron. Detailed analyses are shown as follows:—

	Fe	Mn	P	S	Al_2O_3	SiO_2	CaO	MaO	Fe_2O_3	MnO_2	Insoluble Substance	Loss in Calcination	Water
Shihmawu, Chuchi *(a)* (石馬塢)	—	—	—	—	1.08	—	0.68	—	12.14	9.10	62.24	12.70	—
Shihmawu, Chuchi *(b)*	—	—	—	—	7.08	—	1.44	—	12.96	7.08	56.90	15.78	—
Shihmawu, Chuchi *(c)*	—	—	—	—	1.74	—	0.72	—	11.66	7.08	64.04	12.92	—
Wanchiawuts'un, Chuchi (汪家塢村)	3.05	1.25	0.22	0.03	4.12	67.34	5.46	6.03	—	—	—	7.92	1.40
Chenchai, Chuchi (陳　砦)	6.80	0.096	—	—	5.66	52.14	0.684	—	—	—	—	—	—
Tamaowu, Chuchi (大毛塢)	5.29	0.46	—	—	0.41	41.37	8.14	—	—	—	—	—	—
Tungwushan, Yühang *(a)* (東塢山)	—	24.04	—	—	—	—	—	—	—	—	—	—	—
Tungwushan, Yühang *(b)*	—	37.15	—	—	—	—	—	—	—	—	—	—	—
Lit'angwu, Yühang (裏塘塢)	2.02	2.64	3.26	0.33	0.89	—	13.2	—	—	—	—	38.04	—
Wuch'aoshan, Yühang (午潮山)	43.19	12.40	0.20	0.05	—	8.05	—	—	—	—	—	—	—

	Fe	Mn	P	S	Al_2O_3	SiO_2	CaO	MgO	Fe_2O_3	MnO_2	Insoluble Substance	Loss in Calcination	Water
Ert'ienshan (二天山) and Sonishan (泥山), Yühang	0.98	49.50	—	—	—	6.15	—	—	—	—	—	—	—
Sunchiak'eng, Yühang (孫家坑)	—	0.20	—	—	—	—	—	—	—	—	—	—	—
Muchiashan, Yühang (牧家山)	—	0.18	—	—	—	—	—	—	—	—	—	—	—
Tungchiashan, Hanghsien (董家山)	—	0.26	—	—	—	—	—	—	—	—	—	—	—
Shengt'angling, Yühang *(a)* (塘塘嶺)	0.60	37.26	—	—	—	1.00	—	—	—	—	—	—	—
Shengt'angling, Yühang *(b)*	0.60	3.24	—	—	—	—	—	—	—	1.0	—	—	—
Shengt'angling, Yühang *(c)*	4.97	37.62	—	—	—	—	—	—	—	5.6	—	—	—
Lungmenshan, Hanghsien (龍門山)	3.96	59.99	0.25	—	—	1.62	—	—	—	—	—	—	—
Nishawu, Hanghsien *(a)* (泥沙塢)	—	57.45	—	—	—	—	—	—	—	—	—	—	—
Nishawu, Hanghsien *(b)*	—	50.00	—	—	—	—	—	—	—	—	—	—	—
Nishawu, Hanghsien *(c)*	—	4.205	—	—	—	—	—	—	—	—	—	—	—
Nichiulung, Ch'anghua (泥鰍壠)	3.64	40.75	—	30.15	—	—	0.64	8.02	—	—	—	—	—
Chinkangling, Iwu *(a)* (金剛嶺)	—	47.13	—	—	—	—	—	—	—	—	—	—	—
Chinkangling, Iwu *(b)*	—	45.28	—	—	—	—	—	—	—	—	—	—	—

CHAPTER V

ANTIMONY

ANTIMONY deposits are found only in five *hsien* of the Province, namely, Shunan, Shuian, K'aihua, Ch'anghua, and Yühuan. The highest antimony content of the ore is only about 65 per cent, which is much inferior to the ore found in Hunan. Details of the Chekiang deposits are as follows:—

Location	Present Condition
Shunan:	
Hsüchiashan (徐家山), Ssutu (四都).	Suspended
Yinshan (銀山), K'uihsingch'iao (奎星橋).	"
Chuchiawu (朱家塢).	"
Kuniuling (牯牛嶺), Tsut'ungyuan (梓桐源).	"
Chienmenshan (劍門山), Tsut'ungyuan.	"
Shuian:	
Ch'ulungshan (初龍山), Maowanchiao (毛灣脚).	In operation
Chiangwanshan (姜灣山), Hengch'i (橫溪).	" "
Mat'ien (麻田), Shilutu (十六都).	" "
K'aihua:	
Chit'i (際底). Pehhsiang (北鄉).	Suspended
Chüch'i (鉅溪), & Hsiaofuwushan (小夫塢山), Chikuchuang (際谷莊).	"
Waichiti (外際底), Tach'ipien (大溪邊).	"
Ch'anghua:	
Paitawu (白大塢) and Maochuwan (毛竹灣), Santu (三都).	"
Shanchüwu (山直塢), Shimingchuang (石明莊).	"
Pehchangwu (百丈塢), Shimingchuang.	In operation
Maochuwan (毛竹灣), Chengchühsing (城區鄉)	" "
T'utiwan (土地灣), Shimingchuang.	" "
Tungshanp'ing (東山坪), Shimingchuang.	" "
Yühuan:	
Ch'anganshan (安良山).	" "

Antimony deposits in Chekiang Province usually also contain iron, lead, and sulphur; characteristic analyses follow:—

Location	Sb	S	Pb	Fe	SiO_2	As	Zn	Sn
Shanchuwu, Ch'anghua	45.68	15.02	——	4.82	——	7.05	1.87	——
Waichiti; K'aihua	14.50	24.14	53.60	0.76	——	2.13	——	1.14
Kuniuwu, Shunan	45.20	46.70	17.02	10.94	1.74	3.45	——	——
" "	65.20	37.92	1.66	1.04	0.72	0.42	——	——
Chienmenshan, Shunan	68.42	21.81	3.26	1.94	2.24	1.20	——	——
Paichangwu, Ch'anghua	26.57	22.94	22.12	3.74	8.74	2.88	——	——
" "	57.14	20.02	15.92	2.08	1.24	1.42	——	——

All deposits are worked with primitive methods, and the cost of production per ton is only about $15, but owing to difficulty in transportation, freight to Shanghai costs from $40 to $50 per ton.

CHAPTER VI

SILVER

SILVER-MINING in Chekiang is scarcely more than a matter of historical record. During the Ming and Ching Dynasties (about 300 years ago) silver deposits were worked in 12 *hsien*. Particulars of these and other workings are as follows:—

	Remarks
Hsuanp'ing:	
Lungkeng (龍坑), Hsipeihsiang (西北鄉).	Worked in Ming Dynasty
Tayinkeng (大銀坑), Puai (普愛).	Worked in Ching Dynasty
Lishui:	
Yintungpei (銀銅背), Yinkengtsun (銀坑村).	Worked in Ching Dynasty
Ts'ingt'ien:	
Houling (后嶺), Chihchitou (芝溪頭),	———
Yintungchu (銀洞窟), Yinkengtsun.	Worked in Sung Dynasty
T'angch'i:	
Yinkeng (銀坑), Yinkengtsun.	Suspended since 1919
Ch'angshan:	
Yintsingtung (銀精洞), Taoshuwan (桃樹灣).	Suspended since 1919
Ninghai:	
Shihniukeng (石牛坑).	Not yet worked.
Hsienjenyen (仙人岩).	" " "
Talaishan (大來山), Minkang (繁崗).	" " "
P'ingyang:	
Yinkeng (銀坑)	Worked in Ming Dynasty
Iwu:	
Yinkengtung (銀坑洞)	In operation
Hsiangshan:	
Chenshanao (陳山喬), Paituntsun (白墩村).	Suspended since 1914
Chuchi:	
Taochiuwan (搗臼灣), Chihtaohsiang (羊道嚮).	Suspended since 1927
Shuich'ang:	
Tungmashan (通麻山)	In operation
Chuyanglu (鉚洋路)	" "
Linshantou (林山頭)	Not yet worked
Chihsiatien (記下田).	" " "
Chihsiachu (記下局)	In operation
P'ukiang:	
Yinchienkuang (銀鉛礦), Chinyintsun (金銀村).	" "

The Lungkang deposits in Hsuanp'ing were the most extensive silver-mines in the Province, but owing to the lack of necessary equipment, work was suspended in the belief that the ore were exhausted. As a matter of fact, the reserve in those old pits is still very extensive, and could be worked for many years to come. The Taochiuwan deposit at Chuchi was worked by the Ta Feng Company in 1926, but was abandoned in the autumn of that year after several months' unsuccessful effort. The Yintsintung deposits in Ch'angshan, and the Yinkang deposits in T'angch'i were respectively worked by Chen I-chien (陳益謙) and the Pao Feng Company in 1919, but on account of limited capital, they were abandoned after a short period of operation.

CHAPTER VII

ZINC, LEAD, AND COPPER

ZINC, lead, and copper are frequently found together in a mixed state, while zinc blende often contains iron, sulphur, and copper. Zinc and copper mines are worked in Hunan, Yunnan, Kweichow, Szechuan, Hsikang, and Liaoning, while in Chekiang province mines are found in the Oukiang Valley (甌江流域) and Futs'unkiang Valley (富春江流域). Places where lead is found include Ninghai, Chenhai, Shunan, Shuian, Hsiangshan, Shouch'ang, Chuchi, Ch'ühsien, Fuyang, Ch'anghua. Lots'ing and Yühang. Copper is found at Wuk'ang, Sungyang, Shuich'ang, Chienteh, Hsiangshan, Linhai and Ninghai.

PRODUCING DISTRICTS.

The hsien in which sphalerite or blende or (閃鋅鑛) is found number four; zinc and copper ore is found in five, galena or sulphide of lead in 12; lead, zinc and copper ore in five, and copper and yellow copper ore in seven. Particulars are shown as follows:

SPHALERITE

Hsien	*District*
Chuch'i	Kaowuk'eng (高坞坑)
"	Wuk'eng (坞坑)
"	Yinchienfeng (銀尖峯)
"	T'angli (塘裏) and Shihyenshan (石岩山)
Ch'ühsien	Yink'eng (銀坑)
"	Yintungpei (銀洞背)
Fuyang	Yinkungshan (銀孔山)

ZINC AND LEAD

Hsien	*District*
Yühuan	——
Yungchia	Shangp'aik'eng (上牌坑)
"	Shuits'unwan (水春灣)
"	Wulo (五羅)
Fuyang	Kuochiawan (郭家灣)
Tungyang	Hsichenshan (西甄山)
Fenghua	Yinshankang (銀山崗)

GALENA

Hsien	*District*
Ninghai	Hsialiaoan (下廖庵) and Lungt'oushan (龍頭山)
"	Ts'ungshan (聰山) and Wangshih (王試)
"	Shuangchienshan (雙尖山)
Chenhai	Pamienan (八面安)
Shunan	Tamaok'eng (大茂坑)
"	Chinchukeng (金竹坑)
"	Lengwuli (冷塢裏)
"	Chienchiawu (錢家塢)
"	Yangts'un (楊村)
"	Hsinglinch'iao (杏林橋)
"	Yaochiawan (姚家灣)
Hsiangshan	Chenshanyink'eng (陳山銀坑)
Shouch'ang	Yentungshan (岩洞山)
Chuchi	Shihtawan (石礎灣)
"	Tungyenshan (洞岩山)
"	Tach'engwu (大成塢) and Hsiaoyink'eng (小銀坑)
Chühsien	Hsuehpaok'eng (雪寶坑)
Fuyang	Tungshants'un (洞山村)
"	Hengshan (橫山)
"	Chuchiap'ing (朱家坪)
"	Yaochiawu (姚家塢)
Ch'anghua	Yintsuwan (銀子灣)
Lots'ing	Laowuhsiangshan (老五象山)
Yühang	Maowanli (毛灣里)
"	Wanch'iaot'ou (灣橋頭)

LEAD, ZINC AND COPPER

Hsien	*District*
Yungchia	Yink'engshan (銀坑山)
〃	Liaohoushan (寮後山)
〃	Ch'ienshan (前山)
〃	Talungshan (大龍山)
〃	Hengk'eng (橫坑)
〃	Panluk'eng (半路坑)
Ts'ingt'ien	Tienhou (殿後)
〃	Yentunfeng (烟墩峯)
〃	Chihk'eng (直坑) and Nuichuangchueh (牛藏脚)
K'aihua	Shunshan (舜山)
P'ukiang	Chinyints'un (金銀村)
〃	Chinyints'un
Shunan	Chinchu (金竹) and Wuk'ou (坞口)

COPPER

Hsien	*District*
Wuk'ang	———
Sungyang	Shihts'angyuan (石倉源)
Shuich'ang	Chihlingt'ou (治嶺頭)
Chienteh	Yenchiawu (鄢家坞)
Hsiangshan	Pailushan (白露山)
〃	Yintsushan (銀子山)
Linhai	Lingwai (嶺外)
Ninghai	Tungmenpi (東門陴) and Chiashan (架山)

COMPOSITION OF ORE.

The Composition of the various ores in different localities is shown in the following table:—

Ore	Producing district	Zinc	Lead	Copper	Iron	Sulphur	Magnesium	Silicon Dioxide	Antimony	Potassium	Calcium	Carbon Dioxide	Aluminium Oxide	Insoluble Matter
Sphalerite	Chenyink'eng (鎮銀坑), Ch'ühsien	18.92	—	0.22	38.10	36.10	1.40	—	—	—	—	—	—	0.30
„	Yintungpei (銀洞背), Ch'ühsien	1.90	—	—	38.10	36.00	—	—	—	—	—	—	—	—
„	Yink'ungshan (銀孔山), Fuyang.	42.00	0.88	—	6.82	—	0.14	6.15	—	—	—	—	—	—
Zinc and Lead	Peishantao (拔山島), Yühuan.	5.58	62.8	—	6.15	18.14	—	5.12	0.92	—	—	—	—	—
„ „ „	Shangpaikeng (上牌牌) Upper range.	17.2	2.58	—	21.98	18.94	—	—	—	—	—	—	—	36.04
„ „ „	„ lower range	21.04	0.58	—	26.74	19.02	—	—	—	—	—	—	—	30.94
„ „ „	Shuits'unwan (水孝灣), Yungchia.	17.14	0.94	—	30.04	19.02	—	—	—	—	—	—	—	1.32
„ „ „	Sunk'englung (孫坑龍), Yungchia.	13.90	2.12	—	17.12	15.02	—	—	—	—	—	—	—	0.02
„ „ „	Sunk'engwulo (孫坑五羅), Yungchia.	19.20	1.04	—	27.72	23.12	—	—	—	—	—	—	—	27.20
„ „ „	Yinshank'ang (銀山崗), Fenghua.	31.62	3.50	—	25.38	36.40	—	—	—	0.94	—	—	—	—
Galena	Tungshants'un (洞山村), Fuyang.	—	55.86	—	1.95	11.65	0.05	25.70	—	—	—	—	—	—

Ore	Producing district	Zinc	Lead	Copper	Iron	Sulphur	Magnesium	Silicon Dioxide	Antimony	Potassium	Calcium	Carbon Dioxide	Aluminium Oxide	Insoluble Matter
Galena	Fuyang	1.50	63.60	——	5.05	3.80	——	5.00	——	——	——	——	——	——
„	„	——	57.99	——	1.96	6.34	0.05	——	——	——	——	——	——	——
„	Tungling (銅嶺) Fuyang	1.00	40.46	——	——	——	——	——	——	——	——	——	——	——
„	„	0.25	62.44	——	——	——	——	——	——	——	——	——	——	——
„	Wangshihts'ungshan (王氏嘯山), Ninghai.	1.02	66.97	0.46	3.60	14.0	——	——	——	——	——	——	——	——
„	Lengwuli (冷塢里), Ninghai.	4.74	71.89	——	1.04	20.07	——	1.14	——	——	——	——	——	——
„	Yaochiawan (姚家灣), Shuian.	——	42.14	——	3.06	15.72	——	7.47	——	——	15.68	13.32	——	——
Lead, Zinc & Copper	Yink'engshan (銀坑山), 1st range Yungchia.	3.14	7.42	1.42	7.12	3.94	——	——	——	——	——	——	——	64.00
„ „ „ „	„ 2nd range	3.24	2.12	2.20	1.98	4.12	——	——	——	——	——	——	——	85.20
„ „ „ „	„ 3rd range	1.12	4.24	1.92	3.84	4.10	——	——	——	——	——	——	——	66.20
„ „ „ „	Liaohoushan (寮後山), Yungchia.	1.02	14.20	0.34	19.40	3.40	——	——	——	——	——	——	——	58.60
„ „ „ „	Sunk'engch'ienshan (孫坑前山), Yungchia.	2.14	12.79	0.44	2.72	3.74	——	——	——	——	——	——	——	76.80

Ore	Producing district	Zinc	Lead	Copper	Iron	Sulphur	Magnesium	Silicon Dioxide	Antimony	Potassium	Calcium	Carbon Dioxide	Aluminium Oxide	Insoluble Matter
Lead, Zinc & Copper.	Tailungshan (大龍山), Yungchia.	2.72	2.34	2.80	4.12	3.04	——	——	——	——	——	——	——	80.20
〃 〃 〃 〃	Huangtats'un (黃大村), Yungchia.	2.88	3.94	1.04	3.02	2.84	——	——	——	——	——	——	——	84.00
〃 〃 〃 〃	Hsialungtien (下龍殿, Ts'ingt'ien.	2.12	5.94	2.12	10.02	2.12	——	——	——	——	——	——	——	60.00
〃 〃 〃 〃	Yentunfeng (烟墩峯), Ts'ingt'ien.	1.94	3.12	1.32	8.24	1.94	——	——	——	——	——	——	——	74.80
〃 〃 〃 〃	Shunshan (舜山), K'aihua.	——	4.48	0.32	8.12	9.64	——	——	——	——	——	——	——	75.80
〃 〃 〃 〃	Chinyints'un (金鼠村), 1st ore, P'ukiang.	——	15.22	——	5.65	10.04	——	——	——	——	——	——	——	67.65
〃 〃 〃 〃	〃 2nd	0.48	10.30	——	12.64	17.02	——	——	——	——	——	——	——	57.70
〃 〃 〃 〃	〃 3rd	1.02	3.24	0.12	10.55	15.60	——	——	——	——	——	——	——	67.64
〃 〃 〃 〃	〃 4th.	8.84	1.94	1.94	15.29	20.02	——	——	——	——	——	——	——	17.75
〃 〃 〃 〃	Chinchuwuk'ou (金竹坞口) 1st ore, Suisn.	10.52	7.84	1.50	3.02	7.04	——	——	——	——	——	——	——	68.10
〃 〃 〃 〃	〃 2nd.	6.44	4.12	1.20	2.72	7.07	——	——	——	——	——	——	——	77.14
〃 〃 〃 〃	〃 3rd.	7.78	9.60	1.14	1.78	5.82	——	——	——	——	——	——	——	72.06
Yellow Copper	Northwestern Wuk'ang (武康西北鄉)	1.40	——	2.83	59.65	——	——	11.56	——	——	——	——	1.40	——

EXTENT OF DEPOSITS

The estimated deposits of various ores in Chekiang Province are only aproximate, and there are no statistics kept showing the actual production of metals. According to an investigation made in 1931 by the Chekiang Provincial Government, the zinc, lead, and copper deposits in Yungchia and Tsingtien are estimated as follows:

Ore.	*Producing District.*	*Zinc.*	*Lead.*	*Copper.*
Lead, Zinc & Copper	Yink'engshan (銀坑山), 1st range, Yungchia	5,592	19,170	5,166
" " " "	" 2nd range.	3,848	3,600	5,334
" " " "	" 3rd range.	43	237	151
" " " "	Liaohoushan (寮後山), Yungchia	750	15,265	514
" " " "	Sunk'eng (孫坑) and Chienshan (前山), Yungchia.	1,272	11,025	541
" " " "	Talungshan (大龍山), Yungchia.	1,944	2,412	4,082
" " " "	Tahengk'eng (大橫坑), Yungchia.	5,136	10,215	2,780
" " " "	Chungk'oshan (重坷山), Yungchia.	3,402	772	2,352
" " " "	Tienhou (殿後), Ts'ingt'ien.	62,800	255,750	128,100
" " " "	Yentunfeng (烟墩峯), Ts'ingt'ien.	1,734	4,027	2,394
Zinc and Lead	Shangpaik'eng (上牌坑), upper range, Yungchia.	2,570	558	——
" " "	" lower range.	2,198	88	——
" " "	Shuits'unwan (水春灣), Yungchia.	3,328	263	——
" " "	Sunk'eng (孫坑), Yungchia.	2,496	549	——
" " "	Sunk'eng (孫坑) and Wulo (五羅), Yungchia.	1,435	112	——
TOTAL.....		98,548	324,143	152,414

CHAPTER VIII

OTHER METALLIC MINERAL DEPOSITS

MINERAL deposits not mentioned in the previous chapter found in Chekiang Province include tin, cobalt, and placer gold.

Tin.—The Kochiu (箇 個) mines of Yunnan are the most important in China annually yielding 8,000 tons, valued at over $34,000,000. Other mines are found at Fuchuan (富 川), Hohsien (賀 縣) and Chungshan (鍾 山), Kuangsi Province, and Kianghua (江 華), Linwu (臨 武) Chenhsien (郴 縣), Hunan. In Chekiang tin is frequently found in pyrites which contain tin 6.63 per cent; lead 10.08 per cent; iron, 34.02 per cent; manganese, 0.72; sulphur, 40.04 and non-solvent matter 4.50 per cent. The following table shows the tin deposits located in Chekiang, none of which has been worked:—

District	Location	Name of Deposit
Shuich'ang	Paolichu (保礎區)	Shihchu (石 出) and Lingtou (嶺頭)
"	Waitaoyuan (外桃源)	Niukuhsing (牛 牯 形)
"	Chientehchu (建德區)	Chehshuchiao (接樹橋)
Yungchia	Sanshihchitu (三十七都)	Sunkeng (孫 坑)
"	Ershihli (二十里)	Chengshan (鄭山)
"	Santu (三都)	Hengtien (橫 田)
K'aihua	Tachipien (大溪邊)	

Cobalt.—Two places where this mineral is found in Chekiang Province are Wutsun (吳 村), Kiangshan and Liangtoumen (兩 頭 門), Tungyang. Cobalt is frequently found at the foot of the hills after heavy rains and floods.

In Chekiang it is found in Hsuanwu (玄武), and shipped mostly to Chingtehchen (景德鎮), Kiangsi Province, for making porcelain. The following table shows the cobalt deposits in Chekiang:—

District	Location	Name
Kiangshan	Wutsun (吳村)	
Tungyang	Liangtoumen (兩頭門)	Chinchiaoi (金交椅)

According to chemical analysis the cobalt taken from these mines has the following composition:

	Cobalt	Cobalt Oxide	Ferric Oxide	Aluminium Oxide	Magnesium Dioxide	Nickel Oxide	Silicon Dioxide	Calcium Oxide	Magnesium Oxide	Sulphur Oxide	Arsenic	Insoluable Matter	Loss in Calimation	Loss in Analysis
Kiangshan	—	1.04	30.90	2.14	—	—	—	—	—	—	—	9.98	25.78	—
Tungyang	—	10.05	22.20	—	29.60	0.24	—	0.56	—	0.03	0.22	15.59	20.60	—
Tungyang	9.74	—	19.82	5.20	30.71	8.30	—	—	—	—	—	—	24.00	2.26

Placer Gold.—This is found in streams, and according to an estimate made some time ago by the *hsien* authorities the placer workings in Chekiang are the following:

Hsien	District
Shunan	——
Ch'ühsien	Huakai (華開) and Chinkai (金開)
Chuchi	Chinchienshan (金間山)
Fuyang	——
Yungchia	——
K'aihua	Chinchuling (金竹嶺)

CHAPTER IX

SALT PRODUCTION

THE SALT-FIELDS in Chekiang Province extend Northward from the border of Kiangsu Province to P'inyang, covering an area of about 3,000 *li*. Of the 25 fields six are in western Chekiang, including Jenho (仁和), Hsutsun (許村), Huangwan (黃灣), Paolang (鮑郎), Haisha (海沙), and Luli (瀘瀝), and 19 are in the eastern part of the Province, including Chientsing (錢清), Sankiang (三江), Tungkiang (東江), Chinshan (金山), Yüyao, Ta'ingch'uan (清泉), Ch'uanch'ang (穿長), Taishan (岱山), Tinghai, Tashung (大嵩), Yuchuan (玉泉), Ch'angt'ing (長亭), Tutu (杜瀆), Huangyen, Ch'angling (長林), Peichien (北監), Hsuangshui (雙穗), Shangwang (上望) and Nanchien (南監). The largest field is at Yüyao, and contributes 28% of Chekiang's total production of salt, followed by Taishan with 17%, with the Huangyen and Tinghai fields contributing only 5 per cent of the total output. The following is a list of the salt-fields in Chekiang Province:—

	Area (Kilometers) East-West	South-North	Collectorates	Distance from Field to Collectorate Water (*li*)	Land (*li*)
Jenho (仁和)	80,640	23,040	Yangshihchieh (洋市街), Hangchow	—	2
Hsutsun (許村)	44,352	23,464	Pehssuhsiang, (北寺巷), Haining	108	90
Huangwan (黃灣)	23,040	2,880	Hsints'angchen, (新倉鎮), Haining	160	150
Paolang (鮑郎)	11,520	8,064	Kanp'uchen, (澉浦鎮), Haiyen	192	160
Haisha (海沙)	69,120	5,760	Ch'angch'ienchen (場前鎮), Haiyen	200	180
Luli (瀘瀝)	25,920	10,368	Chuchiatun (朱家墩), P'inghu	240	240
Ch'ients'ing (錢清)	74,880	17,280	Ch'ients'ingchen (錢清鎮), Hsiaoshan	60	54

	Area (Kilometers) East-West	South-North	Collectorate	Distance from Field to Collectorate Water (*li*)	Land (*li*)
Sankiang (三江)	18,432	13,824	T'ouichen (陡泗鎮), Shaohsing	110	100
Tungkiang (東江)	28,800	7,488	Yaochiat'ai (姚家埭), Shaohsing	130	130
Chinshan (金山)	40,320	17,280	Pehkuanchen (百官鎮), Shangyü	250	—
Yüyao (餘姚)	33,500	6,500	Antungshih (庵東市), Yüyao	330	340
Ts'ingch'uan (清泉)	11,520	17,820	Nanmen (南門), Chenhai	460	440
Ch'uanch'ang (穿長)	39,456	29,088	Chuanshan (穿山), Chenhai.	596	560
Taishan (岱山)	—	—	Ch'iaot'ouchen (橋頭鎮), Taishan	704	—
Tinghai (定海)	—	—	Tinghai (定海),	780	—
Tashung (大嵩)	28,800	25,920	Tasung (大嵩), Ninghsien	480	470
Yüch'uan (玉泉)	20,500	60,300	Shihp'uchen (石浦鎮), Hsiangshan(象山)	755	755
Ch'angt'ing (長亭)	50,400	40,200	Ch'angchiehchen (長街鎮), Ninghai	1,020	725
Tutu (杜瀆)	25,000	34,200	T'uhsiach'iao (塗下橋), Linhai	940	820
Huangyen (黃巖)	10,000	52,400	Nanchienchieh (南監街), Wenling	1,290	920
Ch'angling (長林)	1,728	51,840	Wenhsiang (箭塍), Lots'ing	1,400	1,000
Peichien (北監)	—	—	Tsumenchen (蔡門鎮), Yühuan (玉環)	920	760
Hsuangshui (雙穗)	2,880	34,560	Haian (海安), Juian.	1,496	1,000
Shangwang (上望)	—	—	Shangmawu (上瑪塢), Juian	1,500	1,000
Nanchien (南監)	—	—	Kuaot'ou (古鰲頭), P'ingyang	1,550	1,050

Fields producing both brine and salt are Paolang, Haisha, Chientsing, Yüyao, Ts'ingch'uen, Ch'uench'ang, Taishan, Tinghai, Yüch'uan, Ch'angt'ing, Huangyen, Ch'angling, Peichien, Shuangshui, Shangwang, and Nanchien while places yielding more salt than brine include Huangyen, Tungkiang and Chinkiang.

PROCESS OF MANUFACTURE

The manufacture of salt involves the preparation of brine and the evaporation of brine to salt. The brine produced in Chekiang salt-fields is obtained from sea-water, which is pumped into the salt-fields to be evaporated in the sun. The remaining deposit of salt is gathered into heaps, parts of which as required are again dissolved in sea-water, which is poured into big earthen vessels through straw filters to remove impurities. The brine is then ready for the refinery.

The principal equipment of a salt-factory consists of a large iron boiler, iron vessels for storing brine, and a number of bamboo crates. After the brine has been boiled for about two hours the liquid is put into pans to be evaporated, and the salt left behind is scooped into bamboo crates. In some districts the boiler is made of split bamboos rendered fireproof and watertight by a coating of powdered mussel-shell. Such vessels are as durable as iron boilers, but being bad conductors of heat, take longer to boil—three to four hours instead of the two hours required for an iron boiler. To economise time and fuel the iron vessels containing brine are kept near the fire so that the brine is already hot when transferred to the boiler. The salt boiling season lasts from December to February, and most of the men engaged in the work are farmers who have nothing to do in the fields during the slack season.

Another method of obtaining salt is to expose brine to the sun in an evaporation bed, made of wood, stone, or sun-dried bricks, surrounded by a wooden ridge about three inches high. The bed is usually about 14 feet long by 10 feet wide, and holds 20 catties of brine, which yields five catties of salt. The process of evaporation in the hot weather lasts about two hours, but when unfavorable conditions obtain, it lasts much longer. The drying season

lasts from May to September. The salt produced by the boiling method is finer than that obtained by natural evaporation, and the salt produced in Chekiang is not so fine as that made in Szechuan and Kiangsu. An analysis of Chekiang salt gives the following results:—Sodium chloride, 84.4 per cent; water, 8.4, and impurities, 7.1. The following shows the result of analyses of salt carried out by the Salt Revenue Administration in 1931:—

Saltern	Producing district	Method	Sodium Chloride	Water	Impurities
Sankiang	Sankiang	Boiling	82.31	8.43	9.26
"	Ma An (馬鞍)	"	79.68	10.10	10.22
"	Tou I (陡坻)	"	70.96	12.00	17.04
"	Ch'inshanp'ingch'ang (金山併場)	"	86.75	6.31	6.94
Huangyen	Chihshan (赤山)	"	81.24	10.61	8.15
"	Ts'inglin (青林)	Evaporated	87.98	4.85	7.17
"	Tutuping	Boiling	87.50	4.15	8.35
Ts'ingch'uan	Tsingch'uan	Evaporated	85.23	9.36	5.41
"	Ch'uanch'ang	"	92.33	1.12	6.55
Huangchi	Huangchi	Boiling	71.55	15.04	13.41
Paolang	Paolang	"	85.11	8.42	6.47
"	Haisha	"	88.80	5.42	7.78
Ch'ients'ing	Ch'ients'ing	Evaporated	88.51	3.42	6.07
Yüchuan	Yüch'ien	"	88.41	3.12	8.47
Ch'angt'ing	Ch'angt'ing	"	87 98	3.85	8.17
Ch'angling	Ch'angling	"	87.64	5.26	7.10
Peichien	Peichien	"	78.70	10.12	11.18
Shuangshui	Shuangshui	Boiling	86.84	3.78	9.38
"	Shangwang	Evaporated	87.88	4.63	7.49
Yüyao	Mingho (鳴鶴)	"	86.32	5.32	8.36
Taishan	Chüshan (衢山)	"	78.62	9.36	12.02

According to an estimate prepared on the basis of producing capacity of apparatus used by Mr. C. H. Ling (林振翰) in 1923, the production of salt in various fields was follows:—

Field		Annual Production (Piculs)	Percentage
Jenho	(仁和)	112,000	2.02
Hsüts'un	(許村)	151,680	2.84
Huangwan	(黃灣)	81,200	1.52
Paolang	(鮑郎)	30,240	0.56

Field		Annual Production (Piculs)	Percentage
Haisha	(海 沙)	18,500	0.35
Luli	(瀝 歷)	21,240	0.40
Ch'ients'ing	(錢 清)	128,421	2.40
Sankiang	(三 江)	221,760	4.14
Tungkiang	(東 江)	190,080	3.55
Chinshan	(金 山)	110,880	2.07
Yüyao	(餘 姚)	1,500,100	28.00
Ts'ingch'uan	(清 泉)	26,184	0.50
Ch'uanch'ang	(穿 長)	28,116	0.52
Tashung	(大 嵩)	7,350	0.15
Taishan	(岱 山)	869,624	16.22
Tinghai	(定 海)	300,000	5.60
Yuch'uan	(玉 泉)	251,568	4.70
Ch'angt'ing	(長 亭)	54,800	1.02
Tutu	(杜 渡)	30,330	0.57
Huangyen	(黃 巖)	362,500	6.77
Ch'angling	(長 林)	248,896	4.65
Peichien	(北 監)	11,343	0.22
Hsungshui	(雙 穗)	128,522	2.40
Shangwang	(上 望)	57,530	1.08
Nanchien	(南 監)	93,230	1.74
		4,981,333	100.00

According to reports made by the Salt Revenue Administration, the production of salt in Chekiang during a recent decade was as follows:—

	Piculs
1921	3,585,000
1922	3,084,000
1923	4,071,000
1924	3,682,000
1925	4,526,000
1926	2,946,000
1927	3,791,000
1928	4,188,000
1929	4,151,000
1930	3,779,000
1931	3,242,000
Average	3,685,900

COST OF MANUFACTURE

The cost of manufacturing salt varies with the price of brine, fuel, and wages. For 100 catties of salt made by boiling, $2.20 covers expenses for the highest grade, and 80 cents for the lowest, while for sun-dried salt $1.50 covers the cost for the highest grade and 60 cents for the lowest. According to Mr. Ling, the cost of manufacturing salt in various fields is as follows:—

	Process.	Cost per Picul.
Hsutsun	Evaporated	$1.90
"	Boiling	2.20
Jenho	Boiling	$0.55-$2.10
Huangwan	"	1.80
Paolang	"	1.50
Haisha	Boiling	1.20
Luli	Evaporated	1.20
Ch'ient'sing	"	0.68
Sankiang	Boiling	1.90
Tungkiang	"	1.80
Chinshan	"	1.70
Yüyao	Evaporated	0.70
Ts'ingch'uan	"	1.30
Ch'uanch'ang	"	80 to 90 cents
Taishan	"	70 to 80 cents
Tinghai	"	70 to 80 cents
Tashung	Boiling	$1.20
Yüchuan	"	80 to 90 cents
	Evaporated	70 to 80 cents
Ch'angt'ing	Boiling	$1.40
	Evaporated	1.10
Tutu	Boiling	90 cts.
	Evaporated	70 cts.
Huangyen	Boiling	90 cts.
	Evaporated	70 cts.
Ch'angling	Boiling	90 cts.
	Evaporated	60 cts.
Peichien	"	$1
Shuangshui	Boiling	$1
	Evaporated	60 to 70 cts.
Shangwang	Boiling	90 cts. to $1
	Evaporated	60 to 70 cts.
Nanchien	"	60 to 70 cts.

It should be noted that the above prices were quoted ten years ago, and have since shown an increase of about 30 per cent all round.

DISTRIBUTION.

The places where Chekiang salt is distributed are grouped into seven sections, Yinti (引地), K'angti (綱地), Chienti (肩地), Chuti (住地), Chiuningshu (蓿寧屬), T'aishu (台屬) and Wenshu (温屬), Yinti includes Hsiuning (休寧), Hsihsien (歙縣), Changshan, Kuanghsin (廣信), K'aihua, Hsian (西安), Lungyu, Kiangshan, Chinhua, Lanch'i, T'angch'i and Chienteh while in the K'angti area come Shunan, Shuian, Shouch'ang, T'unglu, Fenshui, Fuyang, Yüch'ien, Hsinteng, Ch'anghua, Tungyang, Chiahsing, Shantung (善桐), Chengkuang (程廣), Wuteh (武德), Linan, P'inghu, Haiyen and Chapu (乍浦). Under the jurisdiction of Chienti are Hangchow, Yühang, Haiyen, Ts'ungteh, Shaohsiao (紹蕭), Huangwan, Paolang and Luli. Chuti include Ch'enghsien, Shangyü, Pokuan (百官), and Yüyao while under Ninshu, come Hsiangshan, Tinghai, Taishan, Tashung, Mingho, Ts'ingch'uan and Ch'uench'ang. The districts of Shaliu (沙柳), Hsint'ing (新亭), Tangli (塘裏), Ningcheng (寧城), Huangtan (黃墳), Paich'iao (白蕉), Haimen, Ch'angt'ing, Huach'iao (花橋) come under Taishu, while under Wenshu are included Lishui, T'aishun, Yungchia, Juian, Lots'ing, P'ingyang and Yühuan. According to an estimate made by Mr. Ling in 1919, the annual distribution of salt was as follows: Kiangti, 710,000 piculs; Chienti, 173,000 piculs, Ningshu (寧屬), 60,000 piculs; Hsiangshan 6,000 piculs, Tinghai 3,000 piculs; Shaohsiao, 100,000 piculs; Wenshu, 200,000 piculs of fish curing salt and table salt, 100,000 piculs; Taishu, 130,000 piculs, table salt 18,000 piculs; Yinti, 235,000 piculs; Wuyang (武陽), 350,000 piculs; Chienti (減地), 85,000 piculs; Shanghai Settlement, 100,000 piculs; Tsungming (崇明), 26,400 piculs; and Chanyinsha (常陰沙), 1,600 piculs. Statistics compiled in 1928 by the Salt Revenue Administration show the distribution in two Salt districts of Chekiang is as follows:

SALT DISTRIBUTED IN THE EASTERN AND WESTERN SALT DISTRICTS OF CHEKIANG

(Jan. to June 1928)

	Jan.	Feb.	March	April	May	June
Ihsien	560	2,100	4,680	2,800	4,920	3,450
Hsiuning	2,320	5,630	6,980	5,120	10,950	6,940
Hsihsien	3,699	6,265.50	4,033.50	4,414.50	3,960	2,006
Ch'angshan	840	1,080	1,080	750	960	840
Kuanghsin	10,416	19,989	26,982	11,265	4,416	9,288
Chiahsing-						
Shantung	3,060	2,610	6,120	1,530	2,070	2,880
Chengkuang	9,090	7,200	12,420	9,630	8,910	8,100
Wuteh	1,620	1,350	1,800	630	1,530	1,260
Shuian	2,319	534	1,224	1,926	912	441
Shouch'ang	968	723	343	752	432	448
Yüch'ien	1,911	1,485	2,613	1,443	858	648
Hsinteng	555	198	555	564	426	396
Tunglu	838.50	964.50	1,975.50	856.50	954	411
Fenshui	930	114	273	423	387	726
Ch'anghua	1,767	389.25	853.50	1,818.75	1,484.25	501
Kiangshan	5,315.43	2,686.74	6,084.15	6,695.55	3,749.22	2,607.72
Chinhua	537	1,581	2,550	879	1,347	1,536
Tungyang	1,416	561	1,227	585	354	504
Chuipu	9,591	2,724	6,969	8,466	4,110	4,491
Chühsien	2,139	1,032	1,488	2,436	2,568	1,752
Fuyang	1,704	444	1,119	1,344	777	912
Linan	495	205.50	480	1,243.50	1,166.50	448.50
P'inghu	573	75	1,344	483	423	726
Haiyen	327	96	507	126	18	72
Chapu	34.70	1.20	1.30	76.40	8.20	1.10
Hanghsien	6,654	3,042	10,362	6,504	10,320	6,228
Yühang	972	300	966	1,200	390	930
Hanghsien	504	222	906	864	1,416	390
Haining	2,190	1,164	2,310	1,614	1,050	1,596
Ts'ungteh	2,454	—	2,400	468	1,158	1,398
Shaohsing	10,379.50	3,742	8,159	3,702	957	1,328.50
Hsiaoshan	—	760.96	2,897.39	1,318.61	587	673
Ch'enghsien	3,054	2,307	3,702	4,233	2,214	2,472
Shangyü	126	144	105	258	96	156
Pokuan	600	—	810	810	90	360
Yüyao	—	720	180	180	900	180
Ningshu	3,698.28	7,934.66	2,023.34	7,398.86	1,528.98	1,740.50
Wen Chu	28,620.66	64,544.97	29,726.69	33,266.66	45,122.40	13,370.35
Tanshu and						
Hsiangnan	14,789.50	28,245.50	24,227.50	15,060	9,515	8,699
Huangwan	49.50	12.50	72.45	33.75	30	17
Paolang	124	44.50	93.50	62.50	40.50	49
Luli	378	585	1,530	1,260	651	440

	July	Aug.	Sept.	Oct.	Nov.	Dec.
Tashung	234	223	201	237	217	204
Ch'uanch'ang	368	305.60	1,791.36	1,318.90	775.30	734.50
Ts'ingch'uan	93	93	336	514	409	250
Ningho	160	280	640	680	420	500
Taishan	565	475	13,435	85,605	42,030	29,190
Tinghai	385	—	608	470	502	406
	1,180	1,617	2,890	24,502	15,930	5,240
Chushan	380	190	1,210	8,335	9,935	3,360
Yüyao (Table use)	—	—	1,080	5,658	990	1,350

SALT DISTRIBUTED IN THE EASTERN AND WESTERN SALT DISTRICTS OF CHEKIANG
(July to December 1928)

	July	Aug.	Sept.	Oct.	Nov.	Dec.
Ihsien	2,110	2,610	1,500	1,530	2,100	960
Hsiuning	4,430	5,650	5,980	3,990	3,090	2,230
Hsihhsien	1,142	1,368	2,250	3,610	3,750	2,850
Ch'angshan	1,020	1,020	960	1,050	900	960
Kuanghsin	19,749	15,216	18,918	28,482	13,092	17,613
Chiashing-						
Shantung	3,420	3,600	1,890	2,250	1,800	3,060
Chengtu	11,250	9,990	8,370	9,990	10,800	10,080
Wuteh	1,530	1,620	990	1,150	1,710	990
Shuian	915	1,646	1,632	1,746	2,571	7,863
Shouch'ang	687	647	632	719	—	—
Hsinteng	546	555	402	381	—	—
Tunglu	1,056	868.50	1,245	1,203	1,170	1,548
Fenshui	399	588	732	966	2,421	1,971
Ch'anghua	1,108.50	1,396.75	1,198.50	1,129.50	1,758.75	1,562.25
Kiangshan	4,052.43	4,144.80	3,045.60	7,477.20	4,044.15	6,617.70
Chinhua	2,610	1,674	2,145	1,698	2,103	2,193
Tungyang	753	813	783	1,311	1,614	1,791
Chuipu	4,566	7,176	5,709	4,932	5,439	8,802
Chühsien	2,484	2,814	3,042	2,805	3,054	2,658
Yüch'ien	1,080	942	480	882	2,589	1,332
Fuyang	888	942	825	—	—	—
Linan	450	492	409.50	352.50	605	458
P'inghu	774	777	471	243	396	780
Haiyen	181.50	175.50	43.50	52.50	285	307.50
Chapu	82.30	1.80	19.40	77.20	2.10	2.30
Hanghsien	8,286	7,860	6,444	6,162	7,656	8,976
Yühang	900	936	774	774	1,170	1,200

	July	Aug.	Sept.	Oct.	Nov.	Dec.
Shangsze hsiang	438	426	348	360	576	846
Ts'ungteh	2,598	1,926	1,452	1,320	1,902	2,232
Haining	2,376	1,674	1,164	1,212	1,680	2,010
Shaohsing	1,763	3,939.50	2,624.50	4,562	9,200.50	12,526.50
Hsiaoshan	743	630	793	1,068	1,375	2,513
Ch'enghsien	2,496	4,500	2,034	3,147	5,931	5,493
Shangyü	120	228	198	312	408	327
Pokuan	—	90	135	215.25	370.50	609.75
Yüyao (for soypaste)	1,890	540	720	1,260	900	2,610
Ningsu	4,758.67	2,166.90	2,092.95	4,316.83	5,628	11,719.40
Wenchu	52,812.28	35,106.15	41,420.84	31,884.50	31,497.27	26,391.44
Taishu and	7,919	13,622	6,527	7,722.20	5,908.00	42,785.50
Hsiangnan	2,400	5,557	3,479	3,613	17,177.00	91,92
Huangwan	37.71	55.25	37	34.25	70	51.25
Paolang	72	268	94.50	124.50	276.50	239
Luli	898	989	1,385	1,217	753	604
Tashung	—	210	241	177	204	260
Ch'uanch'ang	808.50	1,165.13	908.70	1,034.20	660.60	721.20
Ts'ingch'uan	491	700	342	218	173	166
Ningho	630	640	520	720	781.70	811.50
Taishan	42,705	43,640	20,980	7,450	3,630	4,765
Chüshan	11,915	12,095	2,730	1,240	1,295	4,160
Tinghai	4,795.20	7,375.50	5,504	11,522	11,685.06	8,960
Yüyao (table-use)	2,790	3,090	1,380	1,530	9,510	8,430

SALES TRANSACTIONS

The method of handling business transactions in salt varies in different localities, and a brief description of some of the methods followed is given below.

"Mao" salt (毛 鹽).—According to Government regulations manufacturers store their salt in godowns which were built at the expense of salt merchants but are operated under Government control and supervision. When a merchant wishes to buy from the manufacturer, he gives a signal by flying a flag at the salt godowns a day or two before hand. On seeing the signal the manufacturers bring in the salt and notify the official weigher through the *peng chang* (蓬 長), who functions as broker between merchant and manufacturer. After weighing

the salt is "chopped" with an official seal and stored in the godown, the official weigher submitting a report to the salt magistrate of the quantity received for storage. Such salt is termed "mao" salt, meaning not yet taxed. As a rule godowns are partitioned into sections, each reserved for a particular manufacturer. Before removing salt from the Government godowns the merchant must pay the taxes at the Salt Revenue Office and obtain a transit pass from the salt magistrate. For any breach of this rule he is liable to punishment for smuggling. Transportation of salt from place of production to the warehouse is mostly by junks.

"Yin" salt (引鹽).—Yüyao Salt handled by Che Tung (浙東) and Kung I (公益) wholesalers is known as "Yin Yen." The sale procedure is somewhat similar to that followed in handling "Mao" salt. The merchant has to pay the tax and obtain a transit-pass before shipment may be made.

REFINED SALT

In Chekiang the refined salt industry was first started in 1927 by the Min Sheng Refined Salt Company (民生精鹽公司) but actual production did not take place until 1930. Unfortunately a year later the premises were flooded by sea-water, causing losses amounting to over $20,000.

The Min Sheng Refined Salt Company, situated at Tungkiangpu (東江浦), Tinghai is capitalized at $150,000 and employs 12 staff members and 80 workers, the highest salary for the former being $100 per month and the lowest $12. The promises of the company cover an area of 121 *mou*.

The crude salt and fresh brine for manufacturing refined salt are obtained from Yüyao, Tinghai and Taishan, amounting to 36,000 piculs a year. The cost of crude salt is $1.20 per picul. The annual production of refined salt by the Min Sheng Company is estimated at 31,000 piculs, and is shipped to Kiukiang, Hankow, and Hsiangtan (湘潭). Kiukiang takes about 2,000 piculs a month, Hankow, 3,000 piculs, and Hsiangtan, 1,000 piculs. An-

nually Kiukiang consums 16,000 piculs, Hankow, $24,000; piculs and Hsiangtan 8,000 piculs. In 1930 these three places took 4,200 piculs, 1931, 24,000 piculs, and 1932 30,000 piculs respectively. The busiest season for this business is between October and March.

Refined salt is subject to a levy of $4.50 for regular tax and $6.50 for surtax. Freight charges are as follows: from seller to launch stations, $0.145 per bag; from launch station to Shanghai, $0.28 per bag; from Shanghai to Hankow; 60 cents a bag; to Hsiangtan, 80 cents, and to Kiukiang, 56 cents.

CHAPTER X

COAL-MINING

COAL deposits in Chekiang are scattered over 18 *hsien* districts, including Kiangshan, Ch'angshan, Shouch'ang, Hsinteng, Chühsien, Chuchi, Lanch'i, Tunglu, Ch'anghsing, Iwu, Hsinch'ang, Ninghai, Wuhsing, Chienteh, Tinghai, T'ient'ai, Ninghsien, and Yüch'ien, 53 fields in all, of which four yield anthracite coal, 20 semi-anthracite, one steam coal, three semi-bituminous, six bituminous, one brown coal, and 18 others, particulars of these mines being as follows:

Variety	Location	Mine	Distance from City Limits (*li*)	Distance from Water Port (*li*)
Anthracite	Kiangshan	Chuangyuanshan (狀元山)	33	3
"	"	Hengkangshan (橫崗山)	—	—
Semi-anthracite	"	Takungwu (大弓塢)	—	—
"	"	T'ientichuan (天地圳)	—	—
"	"	Tiwu (迭　塢)	—	—
"	"	Chuangyuanshan (狀元山)	—	—
"	"	Shihhou (石　後)	47	7
"	"	Nanwu (南　塢)	65	—
1st grade	"	Hengkangshan (橫崗山)	—	—
"	"	Kuanch'ilung (關溪壠)	10	8
Semi-anthracite	Shouch'ang	T'aipaishan (太白山)	38	17
"	"	———	42	22
"	"	Paimatung (白馬洞)	38	—
"	"	———	—	20
Anthracite	"	15 *li* n-w of Tatung (大　同)	30	—
Ordinary	"	Chihyuan (赤　源)	30	—
"	"	Neichangshan (內章山)	20	—

Variety	Location	Mine	Distance from City Limits (*li*)	Distance from Water Port (*li*)
Semi-anthracite	Chühsien	———	25	—
"	"	T'ientsingshan (天井山)	20	25
"	"	Nanmenpan (南門坂)	45	15
"	"	———	25	2
Bituminous	Iwu	Hoshangshan (和尚山)	18	—
"	"	Shangchin (上金)	—	—
Semi-anthracite	Chuchi	Chiwu (奇坞)	—	—
"	"	Liaochai (寥宅)	80	—
"	"	Kuatsu (瓜子)	—	—
"	"	Miaoch'ienshan (廟前山)	—	—
Bituminous	"	———	—	—
"	Ch'anghsing	Ssumoutun (四畝墩)	50	50
"	"	Wushan (吳山)	30	2
"	"	Taokuanshan (倒關山)	—	—
Anthracite	Ch'angshan	Ch'iyen (磎沿)	—	—
Semi-anthracite	"	Poshihshan (博士山)	10	10
Ordinary	"	Poshant'ou (破山頭)	55	—
Semi-Bituminous	Lanch'i	———	33	15
"	"	Maoch'angt'ang (茅長塘)	28	—
Ordinary	"	———	35	—
"	"	———	30	15
"	Ninghai	Liyao (黎岙)	—	—
"	Chienteh	Yehchia (葉家)	80	2
"	Tinghai	P'anshishan (盤寺山)	8	—
"	T'ient'ai	Shant'oupao (山頭鮑)	35	30
"	Ninghsien	Fuchuanshan (福泉山)	70	20
Semi-anthracite	Hsinteng	Tunghsinwan (同心灣)	—	—
Brown	Hsinch'ang	———	5	2
Ordinary	Yüch'ien	———	—	—
Semi-Bituminous	T'unglu	———	45	2
Ordinary	Wuhsing	Wushihwu (五石坞)	—	—

The composition of the various qualities of coal produced in Chekiang province is as follows:—

Mine		Fixed Carbon	Ash	Volatile Matter	Sulphur	Moisture	Calories
Chuangyuanshan	(狀元山)	81.48	9.15	7.43	0.64	1.94	7935
Hengkangshan	(橫崗山)	73.85	16.69	6.85	1.06	2.61	7035
Takungwu	(大弓塢)	76.58	12.97	8.91	0.58	——	7684
T'ientichuan	(天地圳)	82.34	7.17	9.78	0.96	0.71	8046
Tiwu	(迭　塢)	67.29	21.48	9.42	1.45	1.81	6660
Chuangyuanshan	(狀元山)	72.78	12.70	7.50	——	2.02	——
Shihhou	(石　後)	77.16	7.44	14.58	1.84	0.82	7958
Hengkangshan	(橫崗山)	52.02	37.88	7.49	0.90	2.61	5180
Kuanchilung	(關溪壠)	57.46	30.32	10.02	0.68	2.20	5895
Ch'iyen	(隘　沿)	80.51	10.94	3.31	0.48	5.24	7344
P'oshant'ou	(破山頭)	28.56	58.30	11.40	——	1.74	——
Tat'ungchen	(大同鎮)	74.92	17.04	6.40	——	1.64	——
Shihmat'ou	(石馬頭)	42.88	43.30	12.04	——	1.78	——
Changlink'ou	(長林口)	32.90	47.40	18.78	——	0.92	——
Chihyuan	(赤　源)	54.60	36.40	23.48	——	2.02	——
Neichangshan	(內章山)	54.60	36.40	17.56	——	7.44	——
Wunik'ant'ou	(烏泥塔頭)	69.40	17.80	10.05	——	2.75	——
Ssumoutun	(四畝墩)	51.45	15.20	32.35	7.15	1.00	——
Hoshangshan	(和尚山)	40.80	14.00	24.00	——	21.20	——
Hungkungt'ang	(洪公塘)	61.40	27.80	8.50	2.30	——	——
Shangchin	(上　金)	21.42	69.60	8.04	——	0.94	——
T'singshant'ou	(青山頭)	43.75	6.80	48.80	——	0.65	——
Liyao	(黎　元)	35.98	30.72	21.62	0.56	11.68	——
Kanch'i (1)	(甘　溪)	30.10	56.50	13.00	——	0.40	——
Kanch'i (2)	(甘　溪)	27.80	47.00	24.00	——	1.20	——
Pachuehtsing	(八角井)	17.00	30.00	2.92	——	0.08	——

Of the coal-fields included in the above table the largest are Sanchü (三 衢), Ch'anghsing, and Shouch'ang, the first two yielding mostly anthracite, while the last-named is bituminous coal. The following is a brief description of some of the more important coal fields in Chekiang Province:

CH'ANGHSING MINES

The Ch'anghsing field, situated between Hoch'i (合 溪) and Paiyen (白 岘), 45 *li* west of Ch'anghsing and embracing Changchiachien (張家澗), Tsiangchiats'un (蔣家村), Kantsingwan (干井灣), Shengshuehmiao (聖學廟), Nanpaots'un (南寶村) and Nanniehts'un (南桌村), covers a total area of 71 square *li*. At the beginning of the

Ching Dynasty the fields was being worked, but operations were suspended until 1912, when Mr. Chung (鍾仰貽), a leading merchant of Ch'anghsing, suggested their renewal and work was resumed in February, 1913. At the end of that year the field came under the management of Mr. C. Y. Liu (劉長蔭) who in 1918 organized the Ch'anghsing Coal Mining Company (長興煤礦有限公司) yielding a daily output of 6,000 tons. In 1924, owing to mismanagement and financial difficulties caused by civil disturbance in Chekiang and Kiangsu, operations were suspended until July, 1927, when the Company was reorganized as a government enterprise and subsequently the Ch'anghsing Bureau of Coal-Mining (長興煤礦局) was organized under the auspices of the National Reconstruction Commission, which Bureau still controls the property.

The Ch'anghsing mines are situated in the mountain ranges in the west of Chekiang, and transportation is difficult. Coal from this mine is loaded on a light railway which runs from the mine to Wulich'iao (五里橋), a distance of 48 *li*, and from Wulichiao to Wuhsing is transported by water. From the water route runs in two directions, one to Chiahsing and Hangchow while the other touches Wusih and Changchow after crossing Taihu Lake. During the summer and autumn, when the water is high, a junk can carry 50 tons of coal, but in spring and winter its capacity is limited to 20 or 30 tons owing to low water.

Coal produced in Ch'anghsing is of the bituminous type. The following table shows the result of analysis made in 1928 and 1932 of coal produced at Ssumoutun, (四畝墩):—

	Fixed Carbon	Volatile Matter	Ash	Sulphur	Moisture	Calories
1928	44.20	32.68	22.60	0.12	0.52	13270
1932	51.45	32.35	15.20	7.15	1.00	——

The Ch'anghsing workings include the Ssumoutun and Tameishan (大煤山) mines, the former having five shafts and the latter two, though only two of the Ssumoutun

shafts and two at Tameishan are workable. In 1929, when the National Reconstruction Commission took over the management, the daily output of coal at Ssumoutun varied from 50 to 100 tons, while at Tameishan the daily output from each mine was put at 20 tons. In 1930 the daily output amounted to over 100 tons, increasing to more than 600 tons in 1931.

KIANGSHAN MINES

There were formerly 11 mines in the Kiangshan coal-field, and most of these were privately operated. Huyenshan (虎巖山) was once operated by Mr. Chen Tsin (陳瀋) while Mr. Chai Yuan Hu (柴元瑚) operated the Hsiehli-chuang (協里莊), Kuanchilung (關溪壠) and Takungwu (大弓塢) mines. Chaochiahsiang (趙家鄉), after being mortgaged, was worked by Mr. H. T. Hu (胡鴻達), but all these private undertakings were abolished in 1928 by the order of the local government. At present the mines registered for operation are Chuangyuanshan (狀元山) Hengkangshan (橫岡山), Shihhou (石後) and Nanwu (南塢).

The Kiangshan coal-field is divided into 11 districts, as follows:

District	Mine	Distance to City (*li*)	Distance to Water Port (*li*)
1st	Chuangyuanshan	33	3
2nd	Hengkangshan	—	—
3rd	Takungwu	—	—
4th	T'ientichuan	—	—
5th	Tiwu	—	—
6th	Chuangyuanshan	40	—
7th	Huyenshan	47	7
8th	Nanwu	65	—
9th	Shihhou	47	4
10th	Hengkangshan	43	3
11th	Kuanchilung	10	8

The first and second districts produce anthracite, while the other yield semi-anthracite with the exception of the 9th, 10th, and 11th districts; the 9th yields first-class coal, but from the other two only a poor quality is obtainable. The following table shows the results of analysis of the coal produced in various districts:

	Moisture	Volatile Matter	Ash	Fixed Carbon	Sulphur	Calories
First	1.94	7.43	9.15	81.48	0.64	7935
Second	2.61	6.85	16.69	73.85	1.06	7035
Third	1.54	8.91	12.97	76.58	0.58	7684
Fourth	0.71	9.78	7.17	82.34	0.96	8046
Fifth	1.81	9.42	21.48	67.29	1.45	6660
Sixth	2.02	7.50	12.70	72.78	——	——
Seventh	0.82	14.58	7.44	77.16	——	——
Eighth	0.71	9.78	7.30	82.30	——	——
Ninth	0.82	14.58	7.44	77.16	1.84	7948
Tenth	2.61	7.49	37.88	52.02	0.90	5180
Eleventh	2.20	10.02	30.32	57.46	0.68	5895

T'UNGLU MINES

The two mines of the T'unglu field are situated at Wuk'ou (塢口) and Huangfuchia (皇甫家). The Wuk'ou enterprise had been out of operation for a long time. The Huangfuchia mine was worked 20 years ago by Mr. Wang Lien (王廉) but owing to financial difficulty operations were suspended in 1917. In the autumn of 1928 Messrs. Huang Fu-wen (皇甫文) and Chin Hao-chuan (金浩泉) applied for permission to operate the Chinshan mine (錦山煤礦). The Huangchiafu mine is situated 45 *li* north of T'unglu, and the seam is about 100 metres wide.

SHOUCH'ANG MINES

The Shouch'ang coal field consists of nine mines, distributed as follows:

District	Mine	Distance to Shonch'ang (*li*)
1st	Fuhaoling (富豪嶺)	30
2nd	T'aip'aishan	40
3rd	Houch'iwu	45
6th	Meishanlungkou	35
4th	——	15
7th	Chihyuan	30
8th	Paimatungk'ou (白馬洞口)	15
9th	Neichangshan	20

The first district yields anthracite, the second, third and fourth bituminous coal, with supplies of poor quality found in other districts.

An analysis of different samples follows:—

	Moisture	Volatile Matter	Ash	Fixed Carbon
First (*a*)	1.64	6.40	17.04	74.92
First (*b*)	1.84	7.24	13.90	77.02
Fifth	1.78	12.04	43.30	42.88
Sixth	0.92	18.78	47.40	32.90
Seventh	2.02	23.48	36.40	54.60
Ninth	7.44	17.56	36.40	54.60

IWU MINES

The mines of Iwu are situated at Wutsao (烏灶) and Tachang (大廠), the former having been operated since time immemorial. Before the Taiping Rebellion the Wutsao workings produced plenty of coal but operations have been suspended for some time. The Tachang mine was once worked, but the result was not successful. In 1890 merchants from Iwu and Lanch'i organized the Kung Ho Company (公和廠) at Tachang, but owing to difficulties caused by floods working was suspended. In 1901 Mr. W. T. Sheng (沈 徵 仲) of Hangchow started mining operation Hoshangshan (和 尙 山) and Ch'iaot'ouch'ang (橋頭廠), but without success, and in 1919 Mr. Chu Huiching (朱惠卿) began operations, at Paikianghsin (排綱形), but this venture was also unsuccessful.

The distance between Tachang and Such'i (蘇溪) is 16 kilometers, and between Tachang and Iwu is 12 kilometers. The distance between Suchi and Hangchow is 12 kilometers less than that between Iwu and Hangchow, and if this field is eventually operated it would be advisable to build a branch line connecting Such'i and Tachang, thus linking Tachang and Hangchow via Suchi, a distance of 126 kilometers. If coal is transported by this line the freight would be $2.44 per metric ton. Water transport is not very convenient. After reaching the Tungyang River coal is shipped by junk to Hangchow, via Lanch'i, the freight being $1.46 per ton to Lanch'i, and $10.27 between Lanch'i and Hangchow. It is estimated that the coal deposits at Iwu amount to over 1,456,000 metric tons.

CHAPTER XI

FLUORSPAR DEPOSITS

ON ACCOUNT of its color fluorspar, or fluorite, is also widely known as "green-stone," and of the four common varieties—white, yellow, green, and purple—the light green is considered the best. Under the influence of heat it gives out a light like that of fireflies, hence its Chinese name *ying shih* (螢石), or "firefly stone."

Fluorspar is used as a flux in smelting iron and steel. Having a tendency to eliminate the sulphur and phosphorus present in iron ore, it yields from 3 to 5 per cent more iron than any other flux, besides giving the metal more elasticity. It is also used in refining lead, copper, and silver, making mirrors for laboratory use, imitation gems, opaque glass, artificial crystals, etc.

Flourspar mines are found in three places in China only, at Kaiping (蓋平), Liaoning, at Kiaohsien (膠縣), Shantung, and in Chekiang. Formerly Liaoning turned out the largest quantity of fluorspar, but now the output from Chekiang represents over 90 per cent of the total production in China. Fluorspar was first found in Chekiang along the boundary of Hsinch'ang and Ch'enghsien, but has since found in Chinhua, Iwu, Wui, Linan, Wuhsing, Yungk'ang P'ukiang, Ch'angshan, Kiangshan, Lungyu, Chuchi, Hsiangshan, Ts'ingt'ien, Lishui, Hanghsien, Shuich'ang, Ninghai, and T'unglu but only these deposits mentioned below are being worked:

	Village.	Name of Mine.	Distance to City (*li*)	Distance to Waterside (*li*)
Chinhua	Chiao Yen (蕉 岩)	Takungshan (大 公 山)	40	2
Chinhua	Feng Keng (風 坑)	Hsienchiaoshan (先 覺 山)	30	On river
Chinhua	Hsiamashan (下 馬 山)	Litowshan (塋 頭 山)	35	5
Chinhua	Hsiach'ts'un (下 處 村)	Chinwu (近 塢)	40	10
Chinhua	Hsiach'ts'un	Tangwu (塘 塢)	38	8
Chinhua	Hsiatien (下 店)	Tangtangpanshan (東 塘 畈 山)	28	4
Chinhua	Hsiatien	Hsiaowu (筱 塢)	26	2
Chinhua	Shuikenhts'un (水 坑 村)	Chiangkaishan (蔣 家 山)	35	—
Iwu	Chungts'un (鍾 村)	Tienkungshan (天 公 山)	30	—
Iwu		Yenkengshan (岩 坑 山)	10	8
Iwu		Huashihshan (花 石 山)	30	10
Iwu		Tach'iengkenshan (大 尖 坑 山)	30	11
Iwu		Taoch'iangshan (刀 槍 山)	30	11
Iwu		Laohutung 老 虎 洞)	30	12
Iwu		Lungfengtang (龍 鳳 塘)	30	9
Iwu		Huashan (華 山)	30	14
Iwu		Lochitangtowkeng (羅 溪 堂 頭 坑)	26	14
Iwu		Tishuiyen (滴 山 岩)	—	—
Iyuen		Niuchiaochi (牛 卽 跡)	15	7
Wui		Shihlungkang (石 龍 崗)		
		Olowling (周 嶺)	5	3
Wui		Chenfanshan (陳 範 山)	5	3
Wui		Chihshan (指 山)	5	1
Wui		Chinkoushan (金 鉤 山)	5	½
Wui		Chowling (周 嶺)	5	4
Wui		Wuweilung (五 尾 龍)	6	2
Wui		Otow (鵝 頭)	19	3
Wui		Jenhsingshan (人 形 山)	21	6
Wui		Changeheshan (長 蛇 山)	20	5
Wui		Kenishan (干 衣 山)	21	5

	Village.	Name of Mine.	Distance to City (*li*)	Distance to Waterside (*li*)
Wui		Ch'ukeng (曲坑)	19	5
Wui		Shangszumow (上四畝), Hsiaszumow (下四畝), Kuiyinshan (鬼陰山)	18	5
Wui		Ch'uanhsingshan (犬形山)	20	5
Wui		Fataoshan (伏刀山)	21	1
Wui		T'itaoshan (剃刀山)	22	1
Wui		Tachihshan (大指山)		
		Hsiaochihshan (小指山)	23	2
Wui		Ch'enkangshan (陳崗山)	25	4
Wui		Yuchushan (余處山)	7	On river
Wui		Hu Tieh Chia Shan (蝴蝶夾山)	10	2
Wui		Yushantow (余山頭)	8	4
Wui		Ssushan (寺山)	4	4
Wui		Panikun (搬移昆)	4	4
Wui		Fantsengshan (飯甑山)	10	10
Wui		Ssupaikem (四百墈)	12	10
Wui		Kuokungchiaoshan (郭公橋山)	15	12
Wui		Chinhuashan (金華山)	15	12
Wui		Ho Sheng Shan (和尚山)	15	10
Wui		Hwangyuanshan (王圓山)	10	10
Wui		Hsuchiashan (徐家山)	10	10
Wui		Chengyu (鄭俞), Paoshan (寶山)	12	8
Wui		Tienhoulung (殿後龍)	12	8
Wui		Weisumow (外四畝)		
		Neisumow (內四畝)	12	8
Wui	Tatungsze (大通寺)	Maoshan (貓山)	15	2
Wui	Ch'inglungtow (青龍頭)	Chingtashan (慶大山)	20	15
Wui	Chiangwantung (蔣灣洞)	Hsinwulishan (新屋裏山)	30	30
Wui	Chili (溪里)	Wuchishan (屋基山)	15	10

	Village.	Name of Mine.	Distance to City (*li*)	Distance to Waterside (*li*)
Wui		Yulinchuohshan (魚鱗角山)	13	3
Wui		Wushan (塢山)	½	2
Wui		Shihchumen (石柱門)	50	
Wui	Yuanmingsze (元明寺)	Chashan (茶山)	34	
Te'ingt'ien	Tashanwan (塔山灣)	Tak'ushan (大屈山)	120	1
Lishui		Hwangnifang (黃泥坊)	5	5
Ch'engheien		Ssuchiayu (施家坎)	65	
Ch'engheien		Hsuehyu (雪坎)		
Hsinch'ang	Yuanyaotien (元岙村)	Paiyangshushan (白楊樹山)		
Hsinch'ang		Wukuipai (烏龜背), Feifengshanwan (飛鳳山灣).		
Hsinch'ang		Mawan (馬灣)		
Hsinch'ang		Yentungchien (岩洞口)		
Hsinch'ang		Kanniuwan (看牛灣), Pailungtan (白龍潭).		
Hsinch'ang		Changhungshan (長虹山), Hengkeng (橫坑).		
Hsiangshan		Pohoushan (破後山), Wushihshan (五獅山)		
Hsiangshan		Wukuishan (烏龜山)	40	3
Wuhs'ing		Lungshan (龍山)	9	On river
Chuch		Kuanyintang (觀音堂)	60	14
Chuch	Meichichu (梅溪區)	Neiweichichuwu (內外吉竹塢)		
Chuch		Tishuiyen (滴水岩)	35	
Chuch		Tachenwu (大成塢)		
Ch'angshan		Tuiwu (對塢)		65
Kiangshan	Changtaits'un (上台村)	Hiangpishan (象鼻山)	35	15
P'ukiang		Shamaoshan (紗帽山)		
Ninghai	Shaihaiats'un (山下村)	Tiaoshanpeipu (跳山北坡)		
Ninghai		Chunfangtow (前方頭)		
Ch'anghua	Ch'ichihshan (七指山)		60	20
Ch'anghan		Tuiwu (對塢)		
Ch'anghan				
Kiangshan	Shangtaits'un (上台村)		30	Near river

The fluorspar deposits in Chekiang were not worked until 1917, and at first only about 500 tons were produced annually, while in 1919 and 1920 operations were suspended. The output from 1921 to 1925 was 12,000 tons, and from 1926 to 1930 was about 8,000 tons annually, in 1928 the output being the largest, 12,000 tons. Since the general industrial depression following the Japanese invasion of Shanghai in 1932, there has been practically no market for fluorspar, and most of the mines have suspended operations.

Almost 90 per cent of the product from Chekiang was sold to Japanese, American and French merchants, with a small quantity going to Germany. The Mitsubishi Shoji Kaisha, Ltd. (三菱公司), Kobayashi Yoko (小林洋行), & Kuroki Yoko (黑木洋行) in Shanghai are some of the Japanese firms exporting fluorspar. The following is the average price of fluorspar from 1921 to 1930, as given by the Chekiang Fluorspar Trade Association in Shanghai:—

	Per ton
1921	$15.775
1922	15.477
1923	14.635
1924	14.359
1925	14.305
1926	14.857
1927	15.774
1928	16.774
1929	16.885
1930	15.708

From 1931 a better price was usually given for the light green and transparent fluorspar, from $20 to $30 a ton, while large size pieces of high transparency, suitable for making mirrors for scientific instruments or imitation gems fetch over $100 per ton.

The fluorspar market is almost completely controlled by Japanese merchants. In 1928, owing to the large output from Chekiang, 12,000 tons, providing an excessive

supply the price fell sharply, and in order to prevent further declines a trade association was formed the next year. Owing to limited capital some of the producers could not hold to the fixed price, and broke away from the association, which was later dissolved. According to some experienced observers, if the output of fluorspar from Chekiang exceeds 8,000 tons a year, the price is bound to fall on account of excessive supply.

DEPOSITS IN CHINHUA.

In Chinhua eight fluorspar deposits have been found, and with the exception of that at Chiangkiashan (蔣家山) situated in the South-east, all are in the southern districts.

Fluorspar mines at Takungshan (大公山) and Hsienchuehshan (先覺山) have been operated by Ho Shao-han (何紹韓) of the Chang Hua Co. (璋華公司). Work on the first named was suspended in 1930 after being operated five years, while the second stopped operations when the pit collapsed. Litoushan (犂頭山) was not worked until 1925 by the Chi Cheng Co. (集成公司) but operations were suspended owing to bad business. Chin Wu (近 塢), Tang Wu (塘塢), Tung Tang Pan Shan (東塘畈山), Hsiao Wu (筱 塢) and Chiangkiashan have been all opened up, but are no longer being worked.

The vein at Ta Kung Shan measures from 3 to 25 decimetres in width, and has been worked for a distance of 120 metres and to a depth of 20 metres, the product being of very good quality. The vein at Hsienchuehshan has a width of 3 metres, a known length of 120 metres and a depth of 45 metres. The deposit at Chin Wu is from 9 to 10 decimetres wide and 20 metres long, fluorspar and fairly good in quality, while the vein at Tang Wu varies from a few decimetres to 16 decimetres in width and 40 metres in length, but is frequently under water. Supplies from this mine are of medium quality. The upper layer of fluorspar at Tung Tang Pan Shen is 3 metres wide, one metre wider than the lower layer, 20 metres long, and 20 deep, not very white in colour. The workings at Hsiao Wu and Chiangkiashan are very narrow but long, the

former being 1.5 metres wide and 120 metres long, and the latter 2 metres wide and 500 metres long, but only 8 metres has been worked. Fluorspar from the former place is very poor in quality.

Fluorspar from Chinhua is of fair quality, the calcium floride content being about 90 per cent, but supplies from Takungshan are of better quality, the composition being as follows:—

	Percentage
Calcium floride CaF	90.82
Ferric Oxide, Aluminium Oxide Fe_2O_3 Al_2O_3 ..	8.33
Calcium Carbonate	0.85

DEPOSITS IN IWU.

At Iwu fluorspar is found in 11 areas. The deposit at Tienkungshan (天公山) was operated by Yang Cheng-chang (楊成章), but is now leased to Kung Tieh-lang (龔鐵浪). The deposit at Yenkengshan (岩炕山) was worked by Kung Chi-hui (龔智輝) in 1921 with very good results, but operations were suspended owing to the collapse of the working. The bed at Huashihshan (花石山) is being worked by the Nan Hua Co. (南華公司) which company is also working mines at Lohantang (羅漢堂) and Niuchiaochui (牛脚嘴). Workings at Tachienkeng-shan (大尖坑山), and the Taoch'iangshan (刀槍山) Lungfengtang (龍凤塘), Huashan (畫山), and Tishuiyen (滴水岩) have been suspended for various reasons and the Laohutung (老虎洞) deposit is awaiting development.

There is only one vein at Tienkungshan, from 9 to 24 decimetres wide, 935 metres long and 70 metres deep, a length of 300 metres is being worked. Supplies from Chihling (直嶺), Hsiaomamienshan (小馬面山), and Huangchinshan (黃金山) are the best in quality. Yen-kengshan has two veins of fluorspar, the larger being from 1 to 4 metres wide, 200 metres long, and 30 metres deep, the reserve is estimated at 100,000 metric tons, and very good in quality. The small vein is about half a metre

wide and 30 metres long, estimated at 24,000 metric tons. The vein at Huashihshan is 3 metres wide, 300 metres long, estimated at 36,000 metric tons, of medium quality.

The Tachienkengshan vein is one metre wide, 100 metres long and 70 metres deep, medium in quality; at Laohutung the vein is also one metre wide and of medium quality. The deposits at Lungfengtang, Lohantang, Tishuiyen, and Niuchiaochui are of minor importance and poor quality.

The composition of the best fluorspar from Tienkungshan and Yenkengshan is as follows:—

	Percentage
Calcium Floride (CaF_2)	95.49
Ferric Oxide, Aluminium Oxide ($Fe_2O_3Al_2O_3$)	10.00
Silicon Oxide (SiO_2)	0.65
Calcium Sulphate ($CaSO_4$)	1.30
Loss through burning	0.60

DEPOSITS IN WUI.

In Wui there are about 40 fluorspar mines scattered around the city at a distance from three to 20 kilometres, most of them being small, and ranging from one to seven metres in width and four to 100 metres in length. Many of those deposits have been bought up by the Chang Hua and Nan Hua Companies. The composition of fluorspar from a few mines is as follows:—

	Calcium Floride CaF_2	Silicon Dioxide SiO_2	Ferric Oxide Aluminium Oxide $Fe_2O_3Al_2O_3$	Barrium Sulphate $BaSO_4$	Loss Through Burning	Reserve (metric ton)
Shihlungkang (石龍崗)	82.00	14.78	0.84	——	0.92	53,335
Chenfanshan (陳範山)	78.02	20.04	——	——	0.84	34,906
Chihshan (指 山)	79.40	17.60	0.88	——	0.92	28,045
Chinkoushan (金鈎山)	84.80	7.24	2.02	——	1.88	4,132

Fluorspar from Wui is usually shipped to Lanch'i via Chinhua on the Wui River, Sungchi, (松溪) and Meichi (梅溪) on rafts, and taken to Hangchow by junks and thence to Shanghai by rail. In 1931, owing to the large quantity of rice being transported, the freight on fluorspar was 26 cents per 100 catties (each catty equals 18 taels) from Wui to Lanch'i, a distance of 70 kilometres or 120 *li*, but in 1932 the rate was reduced to between 12 and 15 cents. The freight from Lanch'i to Hanghsien was 8 cents per 100 catties in 1931, and from 10 to 12 cents in 1932. The freight by rail from Hanghsien to Shanghai is $1.32 per ton, so that the price of Wui fluorspar in the Shanghai market is about $16 per ton, which includes taxes and other incidental charges.

The reason why fluorspar is taken to Hanghsien from Chinhua by the Hangchow-Kiangshan railway is that the freight per ton by rail is $1.70 more than by water. As just mentioned, freight by water is about $2 per ton, while the rate by rail is $3.10 from Chinhua to Hanghsien, 50 cents to cross the river at Hanghsien, and 10 cents for reloading at Chinhua, making a total of $3.70.

DEPOSITS AT HSINCH'ANG AND CH'ENGHSIEN.

The fluorspar mines on the Hsinchang and Ch'enghsien boundaries were the first to be operated. Before other deposits had been discovered and worked, the demand was so keep that people were very anxious to work these mines, despite the difficulty of access, but later, owing to excessive supply and falling prices, all the mines there suspended operations. The deposits in the Hsinchang district are from 12 to 75 *li* from the city, while those in the Ch'enghsien district are about 50 *li* from the city.

The Paiyangshu (白楊樹) and Hsukiatang (許家塘) deposits are probably parts of the same vein, measuring 600 metres long and from 3 to 9 decimetres wide, the outcrop being 12 metres long. The vein at Wukuipei (烏龜背) is 37 metres long and about 2 metres wide, and very easy to work. The outcrop at Feifengshanwan (飛鳳山灣) is probably a continuation of that at Wukuipei, measuring 700 metres in length, the width of the

Feifengshanwan vein being 6 decimetres. At Mawan (馬灣) the mine is 30 metres long and a metre wide, while at Chiehtungchien (解洞前) the outcrop is from 5 to 6 decimetres wide and 12 metres long. The deposits at Kanniuwan (看牛灣), Hsiaoch'uantu (小船肚), Ch'at'ao (茶桃), Pailungtan (白龍潭) are parts of the same vein, 3,500 metres long, and averaging 2 metres wide. Kanniuwan and Ch'at'ao are about 1,400 feet above sea level. The vein at Hsuehyu is about 2,800 metres long, and the working is 30 metres long and from 0.6 to 2 metres wide. The deposits at Changhungshan, Tutowchun (渡頭村) and Hengkeng (橫坑) are of little importance.

As fluorspar deposits in Hsinch'ang and Ch'enghsien are found in the crevices of igneous rocks, and the depth of these crevices is not known, it is very hard to estimate the extent of the reserves. If it is assumed that the crevices are as deep as 30 metres, and the workable length is 7,600 metres long and 3 metres wide, the reserve would be about 2,100,000 tons. Fluorspar from Kanniuwan, Ch'at'ao, and Hsuehyu is recognised as the best in quality, that from Wukuipei and Feifengshanwan is not so good, while the rest is very poor. The content of calcium and silicon compounds in Ch'enghsien fluorspar is as follows:—

Calcium Floride	34.33
Silicon Oxide	52.26
Calcium Carbonate	0.97

Transportation of fluorspar from Hsinch'ang and Ch'enghsien depends on the Yen River (剡溪), which falls very quickly when there is no rain for a few days, while the current becomes too rapid after heavy rain. The consequent difficulties in transport makes the price of Hsinchang and Ch'enghsien fluorspar on the Shanghai market quite high.

There are three fluorspar mines still working, but employing primitive methods and small capital, ranging from $800 to $1,500, and are not of much importance.

MINES IN HSIANGSHAN.

Active mining operations are being carried on in Hsiangshan at Wushihshan (五獅山), Mutowyaoshan 木頭窑(山), and Wukuishan (烏龜山), but deposits at Maoyang (毛垟), Pohoushan, (破後山), and Chienling (尖嶺) are not yet being operated. The vein from Pohoushan to Wushihshan extends for 2,500 metres and averages 3 metres in width. Four outcrops have been located but are not being operated, while the deposit found at Wushihshan is supposed to be an outcrop from the vein at Pohoushan. The deposit at Wukuishan and Mutowyaoshan is about 1,000 metres long and a metre wide, outcrops having already been worked in primitive fashion.

As the Hsiangshan fluorspar mines are very near the coast, it is convenient to ship supplies to Shanghai by junk. It is estimated that the cost of production and freight to Shanghai from Tungch'i (東溪) is about $12 per ton, and from Maoyang about $10.

CHAPTER XII

ALUM

LARGE deposits of alum rock have been located in many different parts of China. The chief places where alum is found are Pingyang in Chekiang, Liuyang (瀏陽), Hsianghsiang, (湘鄉) and Ch'angning (常甯), in Hunan, Ch'ingchow (青州) and Chaoyuan (招遠), in Shantung, Shouyang (壽陽) in Shansi, Nantsing (南清), P'ingho (平和) and Futing (福鼎) in Fukien, Changte (彰德) in Honan, Mengkiang (濛江) in Kirin, and various districts in Kuangtung, Anhui, and Yunnan. Being found in trachyte, quartzite, igneous rocks, etc., it is known as natural alum, while that produced in Italy, the United States, and Australia is extracted from kaolin and clay by chemical process and is known as artificial alum.

Alum is used for a very wide number of purposes. As a medicine it is used to stop bleeding, and as a preservative and antiseptic; in industry it is used in tanning, dyeing, and paper making; in agriculture is is used as a fertilizer, and is also employed to a large extent in purifying water, extinguishing fire, printing, and painting. As a fertilizer alum gives very effective results in precipitating undesirable matter contained in water used for irrigation, in supplying elements necessary for the growth of vegetables and plants, in helping to disperse otherwise insoluble matter, and in killing harmful bacteria.

Alum mines are worked at Fan Shan (礬山) and Tai Hu (苔湖), the deposit at Fan Shan being 5,500 metres long and 180 metres thick. Chemical analysis shows that the best rock containing about 90 per cent of alum and even the common quality has a content of over 60 per cent, but the crude methods of refining followed by the country people gives an actual field of about 25 per cent of the gross weight.

The geological structure of the Tai Hu deposit is not accurately known, but the area near Wenchow (溫州)

is similar to igneous rock, and it is therefore very difficult to estimate the extent of the reserve in this deposit.

The Pingyang enterprise is supposed to have had its beginnings with the discovery of alum by accident some centuries ago. Two soldiers had made a fire with stones heaped together to serve as a cooking-stove, and on extinguishing the embers with water they found white crystals among the ashes, which proved to be alum. Realising the value of their discovery, they returned later to engage in extracting alum from the rocks, and at the beginning of the Chien Lung regime, about 180 years ago, Chen Shih Kuan (鄭士官) enlarged the working and increased the output, but even then there were only about 20 kilns, and the output was sold only in Chinese markets. After the outbreak of the World War in 1914 the supply of foreign alum was cut off, and sales of Chinese alum increased considerably. Prices rose from $2 to $8 per picul, and the number of kilns operated at Pingyang increased by 40. After the War Chinese alum was gradually eliminated from foreign markets, and kilns were closed down one after another until only 18 were operating in March, 1933.

Mining and refining at Pinyang are entirely separate enterprises. The mine belongs to the Chen and Chu families, each paying 1 per cent of the output to the owner of the ground as rent. The deposit having been operated for a long time, the workings are no longer in the open but go deep into the hillside. The passages are not of regular dimensions, ranging from five to 10 feet in width. Drilling is sometimes carried out, but usually hammers and chisels are used. For lighting purposes kerosene-lamps are used, the fumes from which are noxious, but fortunately the entrance to the two shafts are so situated that natural draught keeps the air underground in fairly good condition.

All tools and supplies needed for mining are provided by the miner himself. The wage paid for carrying 100 catties of aluminate from the shaft to the storehouse is 2 cents if within a distance of two *li*. Aluminate is sold to kiln-owners at about 10 cents per 100 catties.

Kilns are built of stone, with walls 6 or 7 feet thick, 14 feet high, and 14 feet deep, and 26 feet wide, at the top of which is a large boiler. After aluminate is burned in the kiln for 24 hours the heat decomposes the rock, which is then doused with water for a few minutes and broken with hammers into small pieces about two inches square and thrown into cold water. Here the broken fragments are left for three days, where the alum separates itself from the rock and sinks to the bottom in semi-liquid form. This mass is then heated in the boiler on top of the kiln, after which it is passed into an underground chamber to slowly cool. In from seven to 14 days the alum begins to crystallize, and is sawn into blocks of from 60 to 70 catties each. The finest quality is obtained from the upper layer of the first crystallization, known as *fan ching* (礬清) or "pure alum," while the lower layer, being mixed with mud, is called *t'u fan*, (土礬) or "native alum." Alum of more inferior grades can be obtained by three or four subsequent crystallizations of the residue after the alum separates from the rock and is precipitated.

The best rock yields 100 catties of alum from every 400 catties, while for inferior grade from 600 to 1,000 catties are needed to produce 100 catties. The output of one kiln is 3,600 catties of alum a day, and with 17 kilns in Pingyang the annual output is estimated at 183,600 piculs, or 10,928 tons, valued at $459,000. According to a leading merchant the output from 1925, to 1932 was as follows (in bags of 100 catties):—

	Bags
1925	310,000
1926	230,000
1927	220,000
1928	300,000
1929	310,000
1930	250,000
1931	200,000
1932	180,000

Kilns are usually owned by from two to five men, each having his turn at crystallizing alum for a few days every month. Merchants having no kilns of their own can rent them. Nine or 10 men are employed at salaries ranging

from $9 to $20 a month, while the sales office employs four or five men at salaries ranging from $12 to $15 a month. Workers at the kiln are known as "insiders" and "outsiders," the former working in the kiln, and the latter in the shaft and as carriers. The wages of the "insiders" range from 20 cents to $1 a day, while the "outsiders" even less than $1 a day.

The different qualities of alum are known as *ming chu* (明 珠), *tsa chu* (雜 珠), *chuan chu* (穿 珠), *tung chu* (統 珠) or *chin chu* (淨 珠) and *hsiao chu* (小 珠) and *li tsu* (粒 子). *Ming chu* is the best quality, generally called "first grade alum," and is sold at about $4.90 per bag of 100 catties. Production of this grade is small, forming only about 5 per cent of the total output. The output of *tsa chu* represents about 40 per cent of the total, the average price being $3.50 per bag. *Chuan chu,* the third grade, represents about 20 per cent of the total output, and is sold at $2.50. *Tung chu,* inferior to *chuan chu* and forming 25 per cent of the total output, sells at $1.89 per bag. *Hsiao chu,* the lowest grade, is crystallized almost in powder form, and sold at about $1.50 a bag, the amount produced being about 10 per cent of the total output.

During the Imperial regime Ningpo merchants were the sole agents for Pingyang alum, and it was not until the establishment of the Republic that the kiln-owners of Pingyang began to sell their product direct to Shanghai, Ningpo, Fuyang, and Hongkong merchants.

Three routes are open for transporting alum from Pingyang to outside markets. Supplies can be sent to Chaochi (藻 溪) by carriers, thence shipped to Ao Kiang (鰲 江) by sailing-boats to connect with steamers, or sent to Chih Chi (赤 溪) by carrier and shipped by launch to Kuan Shan Yang Mien (官山洋面), where steamers are available, or carried to Chien Chi (前 歧) in Fukien and conveyed thence to Sha Chen (沙 埕) for shipment by steamer. Alum from Pingyang is usually sent to Shanghai, Hongkong, Foochow, and Ningpo from which ports it

is transhipped to other places. The following table shows the amount of alum shipped annually to different ports:—

	Piculs	Percentage
Shanghai	100,000	29
Hongkong	100,000	29
Wenchow	50,000	14
Ningpo	50,000	14
Hangchow & Fuyang	20,000	5
Taichow Prefecture	20,000	5
Wenchow Perfecture	10,000	3
Total	350,000	100

Most of the alum trade passes through Wenchow, and the balance mainly through Ningpo and Hangchow. The following list shows the amount (in piculs) of white alum exported through these ports during the last two decades:—

	Wenchow (Piculs)	Ningpo (Piculs)	Hangchow (Piculs)	Total (Piculs)
1912	29,440	35,284	——	64,724
1913	54,097	23,264	——	77,361
1914	56,869	20,100	——	76,969
1915	75,577	38,475	——	114,052
1916	112,983	82,896	1,211	197,090
1917	60,200	32,970	——	93,170
1918	37,342	16,536	——	53,878
1919	36,011	11,595	——	47,606
1920	61,792	5,587	——	67,379
1921	91,581	5,433	——	97,014
1922	88,477	8,107	——	96,584
1923	115,950	9,417	——	125,367
1924	86,702	4,896	——	91,598
1925	103,325	3,247	——	106,572
1926	100,457	1,422	——	101,879
1927	88,468	186	——	88,654
1928	86,502	553	——	87,055
1929	103,663	123	——	103,786
1930	98,205	235	——	98,440
1931	10	——	450	460

CHAPTER XIII

SEAL STONE QUARRIES

AMONG the stones used for making seals, the varieties found at Shoushan (壽山) and Ts'ingt'ien (青田) are best known. Ts'ingt'ien stones are largely of the pyrophylite variety, with a small quantity of pinite found occasionally at Chi Shan Ch'ü (季山區), but no steatite has been found.

According to color and degree of transparency seal stones are generally classified into two groups, *tung shih* (凍石) or transparent stone, and opaque. The former is actually only semi-transparent, and lustrous like jade. The best grade of *tung shih* is known as *teng kuang shih*, or "lamp-light stone," (燈光石) so-called because when the stone is held up to the light it glows like a lamp, and is more valuable than jade. When the output of *tung shih* was considerable, *teng kuang shih* was also sometimes found, but now not even the common *tung shih*, known as *yu nao tung* (魚腦凍), *chiang yu tung* (醬油凍), *shung hua tung* (松花凍), *feng men tung* (風門凍), *feng men lan* (風門藍), *shung p'i tung* (松皮凍), *tzu t'an tung* (紫檀凍), etc., can be easily found. The stone now generally quarried is the opaque *t'u shu yen* (圖書岩), which is soapy and brittle. Among the six different colors of stones—grey, white, black, red, yellow, and streaked,—the last three are the most valuable.

Besides being made into seals, ornaments, etc., first-grade seal stones of suitable color are also carved into imitation coral and agate ornaments. The price of this grade is from $50 to $100 per 100 catties, while inferior qualities suitable for building purposes or making stone-powder are sold at $1.50 per 100 catties, the powder being used in making paper, soap, toothpowder, earthenware, etc.

In Chekiang the districts of Ts'ingt'ien, Yungchia, Ch'anghua, and Ch'angshan are known for their production of seal stone. In Yungchia it is found only at Chitungshan (紫洞山), about 90 *li* from the city and 2 *li* from Shenao (沈嶴), whence the product is shipped to other ports. Stone from Chitungshan is green in color and hard, but brittle. The stratum measures about one metre in thickness and is largely composed of rhyolite. Stone from Yushihshan, 100 li from the city of Ch'anghua, is of the trachyte variety, vermillion in color, and known as *chi hsüeh shih* (雞血石) or "Chicken-Blood Stone." The quarries at Chitungshan, in Yungchia, and Yushihshan, in Ch'anghua, have suspended operations, while the deposit at Ch'angshan has not yet been worked.

Seal stone from south-east of Ts'ingt'ien is best known and forms the largest portion of the total output. The quarry at Yenlung (岩壟) a Shank'ou (山口) village, lies 12 kilometres south-east of the city and 2 *li* from Shank'ou the outlet to Ou Kiang. Four different colors—red, yellow, white, and black—are found, each one being of good quality, but the first forms the largest percentage of the total output. The quarry extends 400 metres east and west, and 30 men are working there.

The Tushushan quarry (圖書山) lies 13 kilometres south-east of Ts'ingt'ien and 4 kilometres south-west of Shank'ou. Among the red, yellow, white, and black stones extracted, white are the most abundant. In quality the product from this mine is better than that from Yenlung. The stone is of the rhyolite type, and over 20 miners work at the quarry.

The quarry at Paiyangshan (白垟山) is about 15 kilometres south-east of the city. Yellow, red, white, and black stones are found, the yellow being most abundant. Although most of the stones are marked with streaks of different colors, they are generally good in quality. The stratum is thin, extends about 200 metres from north to south, and the stone is of the rhyolite type.

The quarry at Yentou (岩頭) is 20 kilometres from Ts'ingt'ien and 4 from Wuan (吳岸), and outlet to Ou Kiang. White being the only color found and the stone being too hard to carve it is not suitable for making seals, and quarrying operations have been suspended.

Hou Shan (后山), 23 kilometres south-west of Ts'ingt'ien and 9 north-west of Wuan, yields yellow, white, and red stones, the first two being more common. Like the stone from Yentou they are too hard for carving. The stratum is very thin and about 40 metres in length, and the shaft having collapsed, the quarry is no longer operated.

At Chi Shan Tou (季山頭), 29 kilometres from Ts'ingt'ien, is a bed of yellow and red tuff rock, the yellow being better in quality. Operations having only recently been started, there are only a few miners at work and a very small output. The stratum is very thin, 7 decimetres, and only about 10 metres long. The stone is taken to Ou Kiang for export via Paiyenshih (白岩市).

At Men Chien Shan (門前山), 30 kilometres from Ts'ingt'ien, is another quarry of the same character as that just mentioned, the stones being red, and red with yellow streaks, both poor in quality. The bed is thin, about 7 decimetres in thickness and 120 metres in length. Only four men are employed on the working, and the quantity of stone turned out annually is small. The output from this mine is sent to Ou Kiang via Paiyenshih for export.

Lung Ting Tsien (龍頂尖), situated 32 kilometres south-west of Ts'ingt'ien, produces fine yellow and white stones. Formerly large quantities of *tung shih* were found here, but after 1912 the output from this mine became very poor in quality, and operations were therefore suspended. The veins are irregular in size and composed of tuff.

About 29 kilometres south-west of Ts'ingt'ien is Ssu Yuan Chi Ping (寺院址坪), where red, white, yellow, and grey stone is found, the red and white being most common, and also of the best quality. The bed is a stratum 8 decimetres thick and 300 kilometres long.

Before closing the list of stone quarries in Ts'ingt'ien, Fan Tseng Shan (飯甑山) must be mentioned. Situated 29 kilometres north-west of Ts'ingt'ien, this quarry turns out greyish-white stones, sometimes marked with red streaks, of fine quality. The two strata are of the tuff type, the lower measuring one metre and the upper 4 decimetres in thickness, and 4 metres apart. Stone from this mine is sold at about 60 cents per 100 catties.

Below is given the chemical composition of stones from different quarries in Ts'ingt'ien as reported by the Geological Research Institute (地質研究所):—

	Silicon Oxide	Aluminium Oxide	Ferric Oxide	Magnesium Oxide	Calcium Oxide	Sodium Oxide	Potassium Oxide	Water	Titarium Oxide	Total
Ts'ingt'ien	62.57	32.02	—	0.46	1.30	1.32	—	3.06	—	100.73
Shank'ou	64.30	28.94	0.68	—	0.33	—	—	6.00	0.45	100.70
Chishan	58.37	31.47	0.64	—	0.26	1.20	2.40	5.70	—	100.04
Fangshanpaiyang	57.10	23.60	14.21	—	—	0.14	0.22	4.58	0.51	100.36
Ts'ingt'ien Chishan	65.70	28.82	0.63	—	—	—	—	5.58	—	100.73
Ts'ingt'ien Chishan	61.34	30.26	2.08	0.06	0.30	—	—	5.72	—	99.90

Although the quarrying of Ts'ingt'ien stone was started about 800 years ago, it was not until the latter part of the 19th century that carvings were exported abroad. Since the first shipment to the United States in 1926 the Ts'ingt'ien stone-carving industry has been growing, with an annual output now valued at about $120,000. Part of this business is done direct with Yungchia, shipments being exported through Shanghai and Hongkong.

The carvers, male and female, are mostly natives of Ts'ingt'ien, with a few from neighboring districts, buying stone from the miners, and selling the carved pieces themselves.

CHAPTER XIV

OTHER NON-METALLIC DEPOSITS

GRAPHITE

THE graphite production of Chekiang is neither great in quantity nor good in quality. Among the deposits found in four districts, Ninghien Ch'anghua, Shouch'ang, and Tungyang, (下家山村) that at Hsiachiashantsun, in Ninghai, is considered the best, and is of the crystalline form among granite. At Shihmat'ou (石碼頭) in Shouch'ang, Talungshan (大龍山), Kungchiashan (公甲山), and Mit'angchuang (米塘莊) in Tungyang, and Yühuaan (雨花庵) in Ch'anghua are graphite deposits of the non-crystalline type and poor in quality, that from Shihmaot'ou being found in shale rocks. All these deposits are awaiting development.

SAND

Sand is used in large quantities for mixing cement, and large orders have been placed by cantractors in Shanghai with the two sand collecting and sales offices in Tinghai. In Tinghai there are two sand pits, one at Chuchiachien (朱家尖), and the other at Heng Shan (衡山), there are two at Chuchi and one each in Hsiangshan and Chaoch'i (莒溪). The chemical composition of Chekiang sand is as follows:—

	Silicon Oxide	Iron	Lead	Calcium Oxide	Lead Oxide	Manganese
Chents'ai (陳宅) Chuch'i	52.14	6.8	5.66	0.66	——	0.10
Tamaowe (大毛坞) Chuki	40.34	5.29	0.40	8.14	——	0.46
Hsiangshan	97.25	1.08	——	0.24	0.14	——

SHALE

In Chekiang lime-producing districts often produce shale, shale and limestone being frequently found together.

The following table gives particulars of some of the shale mines which have been investigated:—

	Name of Mine	Distance from city	Distance from Hangchow
Chienteh	Yangchichen (洋溪鎮)	50 li.	280 li.
Chienteh	Anjenchen (安仁鎮)	—	—
Ch'angshan	Fangts'un (芳村)	38 li.	470 li.
Lungyu	Tushanchien (杜山前), etc.	30 li.	—
Fuyang	Taok'uants'un (道冠村), etc.	—	—
Fenshui	Laoyawo (老鴉窩), etc.	—	—
Shunan	Tsechiashan (澤家山)	—	—
Shunan	K'ailingchueh (開嶺脚), etc.	—	—
Lungch'uan	T'aiyuan (泰源), etc.	—	—
Lanch'i	Chinwu (進塢)	—	—
Chuchi	Chukechen (諸葛鎮)	—	—
P'ukiang	Pailing (白嶺)	—	—

KAOLIN AND CLAY

Numbers of kilns are found in districts producing kaolin, and various kinds of bowls and jugs are made and shipped to Shanghai, Hangchow, Wenchow, Fukien, Canton, Shantung, and Yingkou. The most important deposits of kaolin and clay in Chekiang are as follows:—

KAOLIN

District	Village	Name of Mine
Lungch'uan	———	Pehkang (北港), & Nankang (南港).
P'ingyang	———	Mocheng (墨城).
Yungchia	Yungchiach'ang (永嘉場)	T'singshan (青山), Maanshan (馬鞍山)
Tungyang	Shangchai (上宅)	———
Ch'anghua	Shihpeng (石棚)	Yühuaan (雨花庵).
Hsiaoshan	———	Jenshan (荏山).

CLAY

District	Village	Name of Mine
Chinhua	Wangts'un (王村)	———
	Chiangpin (江濱)	———

District	Village	Name of Mine
Ch'anghsing	Kangyaoli (缸窑里).	———
Iwu	Chihan (赤岸).	———
Lungch'uan	———	———
Chuch'i	T'aolot'ing (陶樂亭)	———
Shaohsing	Huichaot'ou (灰灶頭)	———.
Ts'uchi	Minghaoch'ang (嗚鶴場)	Wayaotou (瓦窑頭).
Yühang	Erht'ienmen (二天門)	Soniwu (紫泥塢).
Wuhsing	——	Hsülungshan (許龍山)

LIME

The burning of limestone is an important industry in Chekiang. Among the many places where limestone is found are Wengchiashan (翁家山), Yühuangshan (玉皇山), and Chinshan (荆山), in Hangchow; Hoshan (合山, in Yühang; T'iehwu (鐵塢), Ts'ingyunch'iao (青雲橋), P'aihaoch'iao (白鶴橋), and Hokungmiao (河公廟) in Fuyang; Ch'anglan (長蘭) and Shenling (深嶺) in Hsinteng; Paifengling (白峯嶺) in T'unglu; Anjenchen (安仁鎮) in Chienteh; Chukechen (諸葛鎮) and Tungyuan (洞源) in Lanch'i; Tungch'ien (洞前) and Ts'aochiachen (曹宅鎮) in Chinhua; Paimalingts'un (白馬嶺村) in Hsiaoshan; Huichaotou (灰灶頭) in Shaohsing, Ch'angshan (長山) and T'ienanli (天安裏) in Wenling; Lichiahsiang (李家巷), Chints'unpu (金村埠), Chenwanshan (陳灣山), Huanglungtung (黃龍洞) in Changhsing; and Wuhsing. Although accurate statistics regarding the output of lime are not available, judging from the output of Fuyang, 100,000 piculs a year, it is estimated that the total must be over 1,000,000 piculs, valued at from $80 to $100 per 10,000 catties.

BOOK SEVEN
MANUFACTURING INDUSTRIES

CHAPTER I

MANUFACTURING INDUSTRIES

IN COMPARISON with Kiangsu, industrial enterprises in Chekiang are smaller in size and fewer in number, but nevertheless cover a wide field. Manufacturing industries in Chekiang may be classified in the following categories:

Textile.—Cotton spinning and weaving, silk reeling and weaving, knitting, and lace-making.

Foodstuffs, etc.—Rice-milling, oil-milling, brewing, tea-firing, sugar-making, flour-milling, canning, ham-curing, and tobacco manufacturing.

Chemical Industries.—Pottery, glass, machine-made and hand-made paper, soap-making, candle-making, lacquer-making, dyeing and printing, tanning, and match manufacturing.

Metalware and Machinery.—Iron, copper, and tin ware.

Daily Necessities.—Straw goods, fire-crackers, cord and thread making, bamboo and rattan ware, furniture, bamboo and stone carving, umbrellas, paper, fans, face-powder, bamboo chopsticks, cutlery, pens, and ink.

Other industries.—Printing, electric, waterworks, ice-making, stone-powder, lime-burning, battery and tinfoil making, etc.

Among the textile industries silk reeling and weaving are the most important. Chekiang is famous for the production of raw silk and silk fabrics, and is still considered as the centre of the industry though business has declined considerably. In regard to cotton weaving there are only three establishments in the province, with a capital over $1,000,000. There are many establishments of much smaller size, but from the business point of view they are insignificant.

Among the foodstuff industries the most important are rice-milling, oil-milling, sugar-making and ham-curing, followed by canning, while flour milling comes last with only four mills in the province.

In what is regarded as chemical industry the most important is hand-made paper, in which over 20,000 households are engaged, employing 100,000 persons. There are two machine-made paper-mills and nine match-factories in Chekiang, with about a dozen making glass, candles, and leather goods.

There are over 200 machinery factories in Chekiang, with 100 making brass and tin ware and seven ship-building yards.

In the making of daily necessities the most important industries are straw matting and hat making, with rattan and bamboo ware next in importance.

In industries not classified the most important are electrical enterprises and tinfoil making. In Chekiang there are 120 power-plants, capitalised at about $11,000,000, while in tinfoil making over 200,000 people are employed, the annual production amounting to $29,000,000 in value. There are about 100 printing works in Chekiang.

The electrical industry has the widest distribution, covering 58 *hsien*, followed by tea-firing in 54 districts, while the hand-made paper industry is established in 42 *hsien*. Breweries, rice-mills, oil-mills, cotton weaving and knitting factories are also established in from 10 to 30 districts. The following table shows the *hsien* in which various industries are established:—

Industry	Districts
Cotton spinning	Hangchow Municipality, Haining, Hsiaoshan, and Ninghsien.
Cotton weaving (including towel-making)	Hangchow Municipality, Haining, Chiahsing, Chiashan, P'inghu, T'unghsiang, Ninghsien, Chenhai, Shaohsing, Yüyao, Shangyü, Hsinch'ang, Linhai, Huangyen, T'ient'ai, Chinhua, Ch'ühsien, Yungchia and Lishui.
Silk-reeling (including native silk)	Hangchow Municipality, Hanghsien, Haining, Chiahsing, Wuhsing and Tehts'ing.
Silk-weaving	Hangchow Municipality, and Wuhsing.

Industry	Districts
Knitting	Hangchow Municipality, Haining, Chiahsing, P'inghu, Ninghsien, Shaohsing, Huangyen, T'ient'ai, Chinhua, Lanch'i, Tungyang, Iwu, Yungk'ang, Ch'ühsien and Yungchia.
Lace-making	Yungchia, Lots'ing and Hsiangshan.
Rice-milling	Hangchow Municipality, Ninghsien, Yüyao, P'ingyang, Yungchia, Juian, Wuhsing, Ch'anghsing, Linan, P'inghu, Tsuch'i, Lots'ing, Ch'enghsien, Fenghua, Yungk'ang Hsinch'ang, Shaohsing, Chinhua, Yühang, Hanghsien, Shangyü, Hsiangshan, Shouch'ang, Chienteh, Sungyang, Fuyang, and Hsinteng.
Oil-milling	Ninghsien, Yungchia ,Hanghsien, Ch'anghsien, Ch'angshan, Chienteh, Lungyu, Shuian, Lanch'i, Shouch'ang, Kiangshan, Lungch'uan, Ch'ühsien, Fenshui, P'ukiang, Yunho, K'aihua, Sungyang, Fuyang, Chuch'i, Chinhua, Iwu, T'unglu, Yüch'ien, Ts'ingt'ien and Ch'anghua.
Brewing	Shaohsing, Ninghsien, Hangchow, Hanghsien, Yüyao, Yühang, Fengshui, Fuyang, Hsinteng, Yunho, T'unglu, Chinyun, Chiashan, P'inghu, Yungchia, Shuian, P'ingyang, Lots'ing, Yühuan, Chienteh, Ch'angshan, Kiangshan, Lungyu, Chinhua, Lanch'i, Ch'ühsien, Juian, Shouch-ang, K'aihua.
Tea-firing	Shangyü, Shaohsing, Yungchia, Fuyang, Yühang, Chuch'i, Yüyao, Ch'enghsien, Hsinch'ang, Wenling, P'ingyang, Hangchow, Hanghsien, Linan, Yuch'ien, Ch'anghsing, Wuk'ang, Anchi, Hsiaofeng, Ninghsien, Tsuch'i, Fenghua, Chenhai, Linhai, T'ient'ai, Hsienchü, Chinhua, Tungyang, Fenshui, Chiyun, Hsuanp'ing, Huangyen, T'angch'i, Lots'ing, Yunho, Juian, Sungyang, Ch'anghua, Lanchi', Ch'ühsien, Yühuan, Chingning, T'aishun, Lungch'uan, Wuhsing, Iwu, Shouch'ang, Lishui, Ninghai, T'singt'ien, Ch'ingyuan, Hsiaoshan, Yungk'ang, Shuich'ang.

Industry	Districts
Sugar-making	P'ingyang, Yungchia, Shuian, Iwu, Yungk'ang, Juian, Ch'angshan, Hangchow, Lanch'i, Chinhua.
Flour-milling	Ninghsien and Shaohsing.
Starch-making	Juian
Canning	Ninghsien, Fenghua, Yüyao, Yungchia, and Juian.
Condensed milk	Hangchow and Juian.
Ham and bacon curing	Chinhua, Lanch'i, Tungyang, Iwu, P'ukiang, Wui and Yungk'ang.
Rolled tobacco	Sungyang, Fenshui, T'unglu and Hangchow.
Pottery	Lungch'uan, T'aishun, Tungyang, Yungchia, Chuch'i, Ch'anghsing, Juian, Lots'ing, Shaohsing, Sungyang, Fuyang, T'unghsiang, Wuk'ang, T'angch'i, Shuian and Hsiaoshan.
Glass-making	Hangchow, Ninghsien, Lanch'i and Yungchia.
Machine-made paper	Hangchow and Chiahsing.
Hand-made paper	Fuyang, Yühang, Linan, Yüch'ien, Hsinteng, Ch'anghua, Hsiaofeng, Fenghua, Shaohsing, Hsiaoshan, Chuch'i, Yüyao, Shangyü, Ch'enghsien, Hsinch'ang, Linhai, Huangyen, Wenling, T'ient'ai, Hsienchü, Chinhua, Yungk'ang, Wui, P'ukiang, T'angch'i, Ch'ühsien, Lungyu, Kiangshan, Ch'angshan, Chienteh, T'unglu, Juian Shouch'ang, Yungchia, Shuian, P'ingyang, T'aishun, Ch'ingyu, Sungyang, Shuich-ang, Chiyuan and Chingning.
Candle-making	Hangchow and Juian.
Lacquer-making	Ninghsien and Yungchia.
Dyeing and printing	Hangchow, Yungchia, Hsinteng, Chiashan, T'unglu, Fenshui, Lishui, Chinyun, Sungyang, Shuich'ang, Lungch'uan, Yunho and Hsuanp'ing.
Leather-tanning	Hangchow, Yungchia and Ch'enghsien.
Match-manufacturing	Hangchow, Ninghsien, Yungchia, Lishui, Fuyang, Hanghsien and Chuch'i.
Ironware	

Industry	Districts
Brass and tinware	Hangchow, Ninghsieen, Yungchia, Shaohsing, Chiahsing, Ch'anghsing, Hsiaoshan and Yüyao.
Straw knitting	Ninghsien, Yüyao, Yungchia, Linhai, Huangyen, Wenling, Lots'ing, P'ingyang and Juian .
Fire-crackers	Chinhua, Lanch'i, Lishui and Sungyang.
Cord and thread	Tungyang, Yungk'ang, Hangchow and P'ukiang.
Rattan and bamboo ware	Hangchow, Ninghsien and Yungchia.
Furniture	Hanghsien and Ninghsien.
Stone and bamboo carving	Ts'ingt'ien, Yungchia and Fenghua.
Umbrellas	Yungchia, Hanghsien, Ninghsien, Lanch'i, Chinhua, Lungyu, Ch'ühsien, Juian, P'ingyang, Lots'ing, Yühuan, Chuch'i, Hsinteng, Ch'anghsing and Fuyang.
Daily necessities	Hangchow
Printing	Hangchow, Ninghsien, Yungchia, Fuyang, Tsuch'i, Yüyao, Ch'enghsien, Lishui, Sungyang, Shuich'ang and Lungch'uan.
Electrical enterprises	Hanghsien, Haining, Fuyang, Yüyang, Hsinteng, Chiahsing, Chiashan, Haiyen, Ts'ungteh, P'inghu, T'unghsiang, Wuhsing, Ch'anghsing, Tehts'ing, Wuk'ang, Anchi, Ninghsien, Tsuch'i, Chenhai, Hsiangshan, Tinghai, Fenghua, Shaohsing, Hsiaoshan, Chuch'i, Yüyao, Shangyü, Ch'enghsien, Hsinch'ang, Linhai, Huangyen, Wenling, Lanchi', Hsiaofeng, Iwu ,Chinhua, Yungk'ang, Wui, Ch'ühsien, Lungyu, Ch'angshan, iangshan, Chienteh, Shuian, T'unglu, Juian, Shouch'ang, Yungchia, Lishui, Ts'ingt'ien, Sungyang, Lungch'uan, Lots'ing, P'ingyang, P'ukiang, Yühuan and Ch'ingyun.
Water-works	Hangchow.
Ice-making	Ninghsien, Hangchow and Yungchia.
Lime-burning	Lots'ing, Ch'anghsing, Hangchow, Hsinteng and T'unglu

Industry	Districts
Battery making	Hangchow, Ninghsien, Yüyao and Yungchia.
Tinfoil	Shaohsing, Hangchow and Ninghsien.

Taking the *hsien* districts individually, Hangchow Municipality leads in industrial development, having 29 varieties of industry, followed by Yungchia with 27 and Ninghsien with 25 industries. The following table shows the distribution of various industries in each district:

Industry	Districts
Hangchow Municipality	Cotton-spinning, cotton-weaving (including towel-making), silk-reeling (including native silk), silk-weaving, knitting, rice-milling, rolled tobacco, brewing, condensed milk, glass, machine-made paper, soap candles, dyeing and printing, leather, match, ironworks, brass and tin ware, cord and thread making, printing, daily necessities, water supply, ice-making, lime-burning, power-plants. tinfoil, sugar-making, and tea-firing.
Hanghsien	Silk-reeling (including native silk), oil-milling, brewing, match-manufacture, rattan and bamboo ware, furniture, umbrellas, power-plants, rice-milling, and tea-firing.
Haining	Cotton-weaving (including towel-making), silk-reeling (including native silk), knitting, soap, straw knitting, and power-plants.
Fuyang	Rice-milling, oil-milling, brewing, tea-firing, pottery, hand-made paper, match-manufacturing, umbrellas, printing, power-plant.
Yüyao	Rice-milling, brewing, tea-firing, hand-made paper, power-plant.
Linan	Tea-firing, hand-made paper.
Yüch'ien	Oil-milling, hand-made paper, tea-firing.
Hsinteng	Rice-milling, hand-made paper, dyeing and printing, power-plant, lime, umbrella, brewing.

Industry	Districts
Ch'anwhua	Oil-milling, tea-firing, hand-made paper.
Chiahsing	Cotton-weaving (including towel making), silk reeling (including native silk), knitting, soap-making, power-plant, machine-made paper, brass and tin-ware.
Chiashan	Cotton-weaving (including towel-making), knitting, brewing, dyeing and printing, power-plant.
Haiyen	Silk-reeling (including native silk) and power plant.
Ts'ungteh	Power-plants.
P'inghu	Cotton-weaving (including towel-making), knitting, rice-milling, power-plants and pottery.
T'unghsian	Cotton-weaving (including towel-making), pottery power-plant.
Wuhsing	Silk-reeling (including native silk), silk-weaving, rice-milling, tea-firing, ironworks power-plant.
Ch'anghsing	Rice-milling, tea-firing, pottery, brass and tin-ware, umbrellas, power-plant, and lime-burning.
Tehts'ing	Silk-reeling (including native silk) and power-plant.
Wuk'ang	Tea-firing, pottery, power-plant.
Anchi	Tea-firing and power-plant.
Hsiaofeng	Tea-firing and hand-made paper.
Ninghsien	Cotton-weaving (including towel-making) knitting, oil-milling, brewing, cotton-spinning, rice-milling, tea-firing, flour-milling, canned goods, glass, soap, lacquer, matches, iron, brass, and tin ware, straw knitting, rattan and bamboo ware, furniture, umbrellas, printing, power-plant, ice-making, batteries and tinfoil.
Tsuch'i	Rice-milling, tea-firing, printing and power-plant.
Fenghua	Rice-milling, tea-firing, canned goods, hand-made paper, bamboo and stone carved work, power-plant.

Industry	Districts
Chenhai	Cotton-weaving (including towel-making), tea-firing, iron industry, and power-plant.
Hsiangshan	Power-plant.
Shaohsing	Cotton-weaving (including towel-making), knitting, rice-milling, brewing, tea-firing, flour-milling, pottery, hand-made paper, soap, brass and tin ware, power-plant, tinfoil.
Hsiaoshan	Cotton-weaving, lace-making, rice-milling, tea-firing, pottery, hand-made paper, brass and tin-ware, and power plant.
Chuch'i	Oil-milling, tea-firing, pottery, hand-made paper, matches, and umbrellas.
Yüyao	Cotton-weaving (including towel-making), rice-milling, brewing, tea-firing, canned goods, hand-made paper, brass and tin-ware, straw knitting, printing, power-plant and batteries.
Shangyü	Cotton-weaving (including towel-making), rice-milling, tea-firing, hand-made paper, power-plant.
Ch'enghsien	Rice-milling, tea-firing, hand-made paper, soap, leather, printing, power-plant.
Hsingch'ang	Cotton-weaving (including towel-making), rice-milling, tea-firing, hand-made paper, soap, power-plant.
Linhai	Cotton-weaving (including towel-making), rice-milling, tea-firing, hand-made paper, soap, straw-knitting, and power-plant.
Huangyen	Cotton-weaving (including towel-making), knitting, tea-firing, hand-made paper, soap, straw-knitting and power-plant.
Ninghai	Tea-firing.
Wenling	Tea-firing, hand-made paper straw-weaving, power-plant.

Industry	Districts
T'ient'ai	Cotton-weaving (including towel-making), knitting, tea-firing, and hand-made paper.
Hsienchü	Tea-firing, and hand-made paper.
Chinhua	Cotton-weaving (including towel-making), knitting, rice-milling, oil-milling, brewing, tea-firing, sugar, ham-curing, hand-made paper, soap, fire-crackers, umbrellas, power-plant.
Lanch'i	Knitting, oil-milling, brewing, tea-firing, sugar, ham-curing, glass, fire-crackers, glass, umbrellas, and power-plant.
Tungyang	Knitting, tea-firing, ham-curing, pottery, soap, and cord and thread.
Iwu	Knitting, oil-milling, tea-firing, sugar, ham-curing, power-plant.
Yungk'ang	Knitting, rice-milling, tea-firing, sugar, ham-curing, hand-made paper, soap, cord and thread, and power-plant.
Wuk'ang	Ham-curing, hand-made paper, power-plant.
P'ukiang	Oil-milling, ham-curing, hand-made-paper, cord and thread, power-plant.
T'angch'i	Tea-firing, pottery, and hand-made paper.
Ch'ühsien	Cotton-weaving (including towel-making), knitting oil-milling, brewing, tea-firing, hand-made paper, soap, umbrellas, and power-plant.
Lungyu	Oil-milling, brewing hand-made paper, umbrella, and power-plant.
Kiangshan	Oil-milling, brewing, hand-made paper, power-plant.
Ch'angshan	Oil-milling, brewing, sugar, hand-made paper, power-plant.
K'aihua	Oil-milling and brewing.
Chienteh	Rice-milling, oil-milling, brewing, hand-made paper, and power-plant.

Industry	Districts
Shunan	Oil-milling, brewing, pottery, and power-plant.
T'unglu	Oil-milling, sugar, hand-made paper, power-plant.
Shuian	Oil-milling, sugar, hand-made paper, and power-plant.
Shouch'ang	Rice-milling, Oil-milling, brewing, tea-firing, hand-made paper, power-plant.
Fenshui	Oil-milling, brewing, tea-firing, rolled-tobacco, dyeing and printing.
Yungchia	Cotton-weaving (including towel-making), knitting, lace-making, rice-milling, oil-milling, brewing, tea-firing, sugar, canned goods, pottery, glass, hand-made paper, soap, lacquer, dyeing and printing, leather, matches, iron, brass and tin ware, straw knitting bamboo and rattan ware, bamboo and stone carving, umbrellas, printing, power-plant, ice-making, and batteries,
Juian	Rice-milling, brewing, tea-firing, sugar, flour-milling, canned-goods, condensed milk, pottery, hand-made paper, candles, iron, straw knitting, umbrellas, and power-plant.
Lots'ing	Lace, rice-milling, brewing, tea-firing, pottery, straw weaving, umbrellas, power-plant, and lime-burning.
P'ingyang	Rice-milling, brewing, tea-firing, sugar, hand-made paper, umbrellas, and power-plant.
T'aishun	Pottery and hand-made paper.
Yühuan	Brewing, tea-firing, umbrellas, and power-plant.
Lishui	cotton-weaving (including towel-making), tea-firing, dyeing and printing, matches, fire-crackers, printing, power-plant.
Ts'ingt'ien	Oil-milling, tea-firing, bamboo and stone carved work, power-plant.

Industry	Districts
Chinyun	Brewing, tea-firing, hand-made paper, dyeing and printing, and power-plant.
Sungyang	Rice-milling, oil-milling, tea-firing, rolled-tobacco, pottery, hand-made paper, dyeing and printing, fire-crackers, printing, and power-plant.
Shuich'ang	Tea-firing, hand-made paper, dyeing and printing, printing.
Lungch'uan	Oil-milling, pottery, dying and printing, printing, and power-plant.
Ch'ingyuan	Tea-firing, hand-made paper.
Yungho	Oil-milling, brewing, tea-firing, and dyeing and printing.
Hsuanp'ing	Silk weaving, tea-firing, and dyeing and printing.
Chingning	Tea-firing and hand-made paper.

CHAPTER II

COTTON INDUSTRY

CHEKIANG was the third Province in China to establish modern cotton-mills, with Kiangsu and Hupeh first in the field. In 1918 the yarn spindles in the Province represented 4.79 per cent of the country's total, and stood third in the list of yarn-spinning provinces, but in 1930, receded to sixth position, while the number of spindles fell to 1.45 per cent of the country's total.

SPINNING

There are three cotton mills operating in the Province, representing 1/28th of the Chinese-owned mills in the country, equipped with 64,480 yarn spindles, and capitalized with $3,150,000, or 1/44th and 1/45th respectively of the country's total. The industry in Chekiang dates back to 1895, when the Tung Chiu Yuan Mill (通久源) was established in Ninghsien with a capital of $900,000, equipped with 17,048 spindles, and 226 looms, but the plant was destroyed by fire in 1917, and the site sold to the Ho Feng Cotton Mill (和豐紗廠) in 1918. In 1897 the Tung I Kung Mill (通益公), equipped with 20,060 spindles, came into operation, but owing to mismanagement was suspended after a short period. Later the plant was leased to a group of local merchants and reopened under the new name of Ting Hsin Cotton Mill (鼎新紗廠) with the addition of 275 looms, but was again suspended in 1927. In 1929 the plant was leased to the Sean You Zoo Cotton Mill (三友實業社杭廠), of Shanghai, and operated as the Hangchow branch of that concern. The Tung Hui Kung (通惠公) and Ho Feng (和豐) are the two latest mills established in the Province. The Tung Hui Kung Mill, located at Hsiaoshan, was established in 1899 with a capital of $450,000 and equipped with 12,376 spindles, while the Ho Feng Mill was established in 1905, with a capital of $1,500,000. Both concerns are doing fairly good business.

PRESENT CONDITIONS

Current conditions in the cotton industry of Chekiang may be described as follows:—

Sean You Zoo.—The Hangchow branch of the Sean You Zoo Cotton Mill, also known as the Tung I Kung Yu Chi Mill (通益公友記紗廠), is located at Kung Chen Chiao (拱宸橋), a suburb of Hangchow, and was bought from the Tung I Kung interests for $230,000. The site covers an area of 90 *mou*, and since its reorganization the mill is equipped with 20,360 spindles and 765 looms. Both electricity and steam are used as motive power, motors of 750 K.W. and engines of 400 h.p. being installed. The plant is divided into three departments, spinning, weaving, and dyeing, and 1,500 operatives are employed, of whom 400 are adult male workers, 1,000 females, and 100 juveniles. Wages are paid by the day, the maximum rate being $1 for operatives working 11 hours a day, and with a holiday observed every Wednesday.

Tung Hui Kung.—This mill is situated at Chuan Pa Tou (轉壩頭), Hsiaoshan, with a capital of $450,000, but an increase to $600,000 is soon to be made. The site covers an area of 140 *mou*, and the mill is equipped with 14,560 spindles, two steam-engines of 200 h.p. each, and one oil-engine of 25 h.p. The number of workers employed is 1,370, including 230 males, 1,100 females, 30 juveniles, and 10 apprentices. Male workers and apprentices are paid by the month, the rate ranging from $6 to $40, and that for apprentices from $3 to $6. Female and juvenile workers are paid by the day, the rate being from 10 to 45 cents for females, and 15 to 20 cents for children. Operatives are mostly recruited from Ninghsien, Shaohsing, and Ch'eng-hsien.

Ho Feng.—This mill, together with a branch, is situated at Ping Chang Keng (冰廠跟), Ninghsien. The total capital is $1,500,000, including $900,000 as working capital and $600,000 fixed. The site covers an area of 50 *mou*, and the mill is equipped with 23,200 yarn spindles and 3,360 thread spindles, with four steam-engines, generating 1,000 h.p. The number of operatives employed is 1,785, including 579 males, 1,062 females, and 80 children. Twenty workers are paid by the month, receiving from $6 to $18, 1,343 are paid by the day, receiving from 27 to 95 cents, and 432 are paid piece-rates, receiving from $0.40 to $1.15 per piece. Wages are paid at the end of each week.

SUPPLIES OF RAW MATERIAL

Although Chekiang is a cotton producing province, where 500,000 piculs are grown annually, the local staple is only fit for yarn of from 8 to 14 count, consequently only a small amount is consumed by the mills. Of the 25,000 piculs annually taken by the Hangchow branch of the Sean You Zoo Mill, about 75 per cent is Shensi or American cotton. Tung Hui Kung is the largest consumer of Shaohsing cotton, about 90 per cent of the total consumed being from that city, and 73,200 piculs of Yüyao cotton, out of a total of 95,882 piculs, are annually consumed by the Ho Feng Mill.

Electricity supplied by the Hangchow power-plant is used by the Sean You Zoo mill, while coal is used by both the Ho Feng and Tung Hui Kung mills. The former consumes 20 tons a day, the Kailan product being preferred. About 200 piculs of dyestuffs are annually used by the Sean You Zoo plant.

PRODUCTION

The Ho Feng and Tung Hui Kung mills produce coarse yarn only. The annual output of the former is 25,500 bales of 420 lbs., valued at $5,000,000, and of the Tung Hui Kung, 13,000 bales, valued at $2,000,000. In addition to the 2,500 bales of yarn produced by the Sean You Zoo mill, 100,000 bolts of piece-goods and 500,000 dozen towels are also produced, with an aggregate value of about $2,000,000.

The yarn produced by the Ho Feng mill is of 10, 12, and 14 counts, bearing the trade-mark of "lotus-leaf" and "Honey-bee," while that of the Tung Hui Kung mill includes 6, 7, 10, 12 14 and 16 counts, bearing the marks "Double Fish", "Five Lions" and "Chi Ching" (吉 慶). In addition to spinnig coarse yarn under 16 count, yarns of 20, 24, 32, and 42 counts are also produced.

MARKETS

Most of the output of the Tung Hui Kung mill is consumed in the Province, but a small portion is sent to Chungking (重 慶), Szechuen Province. Roughly, 3,000 bales are annually sold in Chinhua and Tungyang, 2,500 in Yungchia, Haimen and P'ingyang, 3,000 in Shanghai, 1,000 in Ninghsien, 500 in Hsiaoshan, and 1,000 in Chungking, Szechuen. The price of a bale of 6-count yarn is $210, 7-count, $210,

10-count, $220, 12-count, $228, 14-count $232, and 16-count, $240. The output of the Ho Feng mill is shipped to Kuangsi, Kuangtung, Szechuen, and Tientsin, in addition to supplying a considerable amount to districts in Chekiang Province. The Sean You Zoo mill products are sold through its own sales offices in Shanghai, Hangchow, and Hankow and shipments as far away as the Straits Settlements are also made.

WEAVING

The modern cotton-weaving industry in Chekiang dates back only to the establishment of the Republic in 1912. The Ta Feng (大豐), at Hai Er Hsiang (孩兒巷), Hangchow, is the oldest mill in the Province. Other mills of importance in the same city are Kuang Sheng (廣生) at Chu Kan Hsiang (竹竿巷), Hui Ming (惠民) at Chang Ching Chieh (長慶街), Chiu Hua Yung (九華永) at Hai Er Hsiang, Yung Hsin (永新) at An Lo Chiao (安樂橋), and Hua Feng Tai (華豐泰) at Fu Chien Chieh (府前街), but the capital of these concerns ranges only from $2,000 to $20,000. The Hangchow branch of the Sean You Zoo mill is the largest cotton-weaving mill in the Province. At Chiahsing the first cotton-weaving mill to be established was that of the Chia Ho Dyeing and Weaving Company (嘉禾染織廠股份有限公司), which, at the beginning, was equipped with only 40 hand-looms, which had increased to 200 by 1917. Following closely came the Chien I Mill (謙益布廠), equipped with over 300 looms, but owing to civil strife in 1923, this concern was forced to close down. Other *hsien* with modern cotton-weaving mills are Ninghsien, Shaohsing, Huangyen and Yungchia. The oldest establishment in Ninghsien is the Fu Chen Dyeing and Weaving Factory (復成染織廠), founded in 1912. There are now seven weaving-mills operating in the city, but with the exception of the Hou Feng (厚豐) and Heng Feng (恆豐), equipped with looms operated by oil-engines, only hand-looms are used. At Shaohsing the first mill was the Yu Sheng Mill (裕生棉織廠), established in 1916, and at present five factories are operating in the city. The cotton-weaving industry of Huangyen is centered at Luchiao (路橋), and the Pu Ming (普明) factory, established in 1918, was the

first of its kind in Huangyen. At Yungchia over 40 cotton-weaving mills are working, but owing to limited capital business is not very prosperous, the total turnover being about $500,000.

PRESENT CONDITIONS

According to recent investigation, the total number of cotton-weaving factories operating in Chekiang, including those engaged in making towels, is 68. The following table shows the name, location, date of establishment, capital, number of workers and looms. of each mill:—

	Location	Established	Organization	Capital	Workers	Looms
Sean You Zoo Hangchow Works..... (三友實業社杭廠)	Hangchow	1929	Corporation	$2,000,000	1,598	—
Ta Feng Sheng Chi (大豐盛記染織廠)	„	1928	Partnership	20,000	220	—
Kuang Sheng (廣生棉織三廠)	„	1923	„	10,000	150	—
Hui Min (惠民布廠)	„	1926	„	6,000	128	—
Chiu Hua Yung (九華永染織廠)...	„	1928	„	11,000	130	—
Yung Hsin (永新布廠)	„	1928	„	6,000	95	—
Hua Feng Tai (華豐泰布廠).....	„	1929	Corporation	5,000	58	—
Pu I (浙江省陸救救院感化習藝所習益工廠)	„	——	Government	12,500	120	—
Ping Min (浙江省陸救濟院貧民工廠)	„	——	„	21,990	260	—
Ta Tung Chang Chi (大同昌記染織廠)	„	——	Partnership	8,000	81	—
Chen Hua (振華染織廠)	„	——	Sole ownership	5,000	91	—
Cheng Feng (正豐布廠)	„	——	Partnership	5,000	61	—

	Location	Established	Organization	Capital	Workers	Looms	
Ching Chin (精勤紗布廠)	Hangchow	——	Partnership	$ 3,000	25	—	
Wei Tung (維通染織廠)	Haining	——	„	8,000	130	—	
Tung Sheng (同盛棉織廠)	„	——	Sole ownership	5,000	60	—	
Li Wan (利萬染織布廠)	„	——	Partenership	3,000	35	--	
Chia Ho (嘉禾染綜廠股份有限公司)	Chiahsing	1912	Corporation	100,000	566	40	foot looms
						208	hand looms
						220	power looms
Hsin Kang (辛康)	„	1926	Sole ownership	4,000	54	34	hand looms
Hsu Ta Mei (許大美)	„	1921	„	3,000	45	30	„ „
Shan I Chang Chi (善益昌記).....	Chiashan	1925	Partnership	30,000	228	--	
Tien Cheng (天成布廠)	P'inghu	1925	Sole ownership	2,000	20	12	„ „
Yuan Chi (元記)	T'unghsiang	1931	Partnership	1,500	13	10	„ „
Hou Feng (厚豐布廠)	Ninghsien	1924	„	22,000	170	40	hand looms
						20	power looms
Hou Feng Branch (厚豐第二廠).....	„	1928	„	——	105	—	
Shun Hsing Tai Chi (順興泰記染織廠)	„	1926	„	16,000	110	48	hand looms
						40	„ „
Heng Feng (恒豐染織布廠).....	„	1929	„	14,000	140	40	dyeing machines
Fu Cheng (復成染織廠).....	„	1912	„	24,000	85	62	hand looms
Chen Hua (振華染織廠)	„	1923	Sole ownership	1,000	94	24	„ „

	Location	Established	Organization	Capital	Workers	Looms	
Shun Hsing (順興布廠)	Ninghsien	1926	Partnership	$ 6,000	87	48	hand looms
Chenhai Kung I (鎮海公益織布廠)	Chenhai	1913	Corporation	30,000	180	300	„ „
Pin Min (貧民習藝所)	„	1932	Government	2,500	25	7	towel looms
Chi Sheng (吉生布廠)	Shaohsing	1928	Sole ownership	10,000	210	230	hand looms
Yu Sheng (裕生棉織廠)	„	1916	Partnership	5,000	105	100	„ „
Ta Cheng Hsing Chi (大成興記棉織廠)	„	1930	„	3,000	19	24	towel looms
Ta Hsing Chang (達興昌廠)	„	1929	„	2,000	18	12	had looms
Pin Min (第一貧民習藝所)	„	1927	Government	1,000	41	30	„ „
Pin Min (縣立貧民習藝所)	Yüyao	1929	„	2,200	49	5	„ „
Pin Min (貧 民 工 廠)	Shangyü	1928	Partnership	20,000	40	18	„ „
Chiu Chi (縣立救濟習藝所)	Hsinch'ang	1929	Government	9,000	25	28	„ „
Pin Min (貧民習藝所)	Linhai	1914	„	7,000	70	40	„ „
Pu Ming (普明織物廠)	Huangyen	1918	Partnership	8,000	100	—	
Fang Wei Ta (方維大)	„	1932	Sole ownership	450	60	—	
Hung Hsing (宏興廠)	„	1932	„	400	10	—	
Chang Hsin Fa (張新發)	„	1932	„	350	9	—	
Chang Ho Hsing (章合興)	„	1932	„	300	6	—	
Shao Mu (少木廠)	„	1916	„	300	60	—	
Chin Lun (錦綸機織廠)	T'ient'ai	1932	Partnership	2,000	21	21	hand looms
Hui Min (惠民棉織廠)	Chinhua	1926	„	20,000	140	132	„ „

	Location	Established	Organization	Capital	Workers	Looms
Chin Kung (勤工棉織廠)	Chühsien	1920	Partnership	$ 8,000	16	—
Lu Cheng (鹿城染機布廠)	Yungchia	1923	Corporation	50,000	280	13 hand looms
Ou Kiang (甌江染機布廠)	„	1923	„	10,000	234	108 „ „
Shou Cheng (漱成染機布廠)	„	1928	Sole ownership	20,000	131	80 „ „
Yung An Li (永安利染機布廠)	„	1928	„	5,000	100	86 „ „
Ching Hua (經華)	„	—	—	4,500	80	40 „ „
Hua Hsing (華興)	„	—	—	1,300	60	30 „ „
Chen I Hsing (陳宜興)	„	—	—	1,000	50	20 „ „
Wang Chin Tai (王錦泰)	„	—	—	700	30	12 „ „
Ming Hua (明華)	„	—	—	1,000	50	20 „ „
Min Sheng (民生)	„	—	—	600	30	15 „ „
Min Sheng Branch (民生二房)	„	—	—	500	20	6 „ „
Mei Ta (美大)	„	—	—	600	20	10 „ „
Ta Lun Lieh Chi (大綸烈記)	„	—	—	500	20	10 „ „
Chin Hua (錦華)	„	—	—	600	20	10 „ „
Chin Hsia (錦霞)	„	—	—	1,000	40	20 „ „
Hsing Yeh (興業)	„	—	—	2,000	60	30 „ „
Jun Yuan (潤元)	„	—	—	1,000	40	20 „ „
Fei Chin (斐錦)	„	—	—	400	15	8 „ „
Li Yung (利用)	Lishui	1904	Corporation	65,000	360	—

The above table shows that cotton-weaving in Chekiang Province largely remains a handicraft, as out of the 68 mills only one is capitalized at $2,000,000, one at $100,000, two at $50,000, 17 at $10,000-$30,000, and 47 with capital ranging from $300 to $10,000.

WORKERS AND WAGES

Of the 7,815 workers employed in this industry, the majority are recruited in the district where the mill is situated. Wages are generally paid by the month, the rate being from $3 to $40 for male workers, and from $3 to $35 for females. Juvenile workers being apprentices, no regular wages are paid, but they receive free board and lodging, and occasional pocket-money. In some *hsien* the piece-work system is adopted. The rate paid for one bolt of cloth in Chinhua is 80 cents, while in Yungchia the wage varies from 50 cents to $1.20. In Lishui, the unit of *chang* (丈 10 feet) is used, and the pay for weaving one *chang* of cloth is 13 cents for male workers, and 9 cents for female operatives.

SUPPLY OF RAW MATERIALS.

The yarn most commonly used by the weaving-mills is 20 count, but yarns of from six to 50 counts are also occasionally used. The annual consumption of the Haining mills is about 3,400 bales, consisting of 16, 20 and 42 counts. The thread used by the Chiahsing mills is shipped from Shanghai, and about 1,000 bales are annually consumed. The total consumption of yarn and thread in the whole Province is valued at over $2,000,000. Recently, the use of rayon in weaving cotton fabrics has been adopted by the Chekiang mills, products bearing the brands of "120" and "150" being the most popular. Dyestuffs are imported from Germany and Great Britain through foreign firms in Shanghai. Other materials, such as sulphur, saltpetre, and paste, are mostly imported from abroad.

PRODUCTION

The products of the Chekiang cotton-weaving mills consist chiefly of various descriptions of cotton piece-goods, though seven of the 68 mills—the Hangchow branch of the Sea You Zoo mill, the Workshop for the Destitute

(貧民習藝所) at Chenhai, the Ta Cheng Hsing Chi (大成興記), the Workshop for the Destitute No. 1 (第一貧民習藝所) and the Ta Hsing Cheng (達興昌) at Shaohsing, the Workshop for the Destitute (平民工廠) at Shangyü, and the Shao Mu (少木廠), Huangyen—are engaged in the weaving of Turkish towels. The following table shows the quantity and value of cotton piece-goods annually produced in the various *hsien*:—

	Quantity (Pieces of 75 feet)	Value
Hangchow	306,500	$2,652,000
Haining	8,200	57,400
Chiahsing	47,700	344,000
Chiashan	560	4,100
P'inghu	2,000	15,000
T'unghsiang	1,300	2,600
Ninghsien	48,600	486,000
Chenhai	20,000	80,000
Shaohsing	38,000	190,000
Yüyao	2,000	10,000
Shangyü	750	3,000
Linhai	3,950	15,000
Huangyen	3,850	33,900
T'ient'ai	700	7,100
Chinhua	12,000	60,000
Yungchia	80,000	610,000
Lishui	33,000	165,000
Total	609,110	$4,735,100

It appears that production of these mills has been steadily on the increase during recent years. The following table shows the output of three leading mills in Chiahsing, Yungchia, and Lishui during the three years ending 1932:—

	Location	1930 (piculs)	1931 (piculs)	1932 (piculs)
Chia Ho (嘉禾染織廠)	Chiahsing	49,000	58,800	52,920
Ao Kiang (甌江染織廠)	Yungchia	10,032	11,112	12,445
Li Yung (利用公司)	Lishui	10,500	12,100	14,000

LOCAL AND OUTSIDE MARKETS

With the exception of the Hangchow branch of the Sean You Zoo mill, whose products are shipped as far distant as Tientsin and Peiping, the output of other mills is mostly consumed in the Province, with a limited quantity shipped to Shanghai and Changchow (常州), Kiangsu Province, and various districts in Fukien.

No accurate figures of annual production are available, but according to recent investigation the turnover for the Hangchow mills during 1931 was $6,561,600, Chiahsing, $354,000, Ninghsien, $1,130,000, and Yungchia, $500,000. Thus, the figures for the whole Province must total about $9,690,000.

PACKING AND PAYMENT

Plain and colored piece-goods are packed in different ways, plain goods are made up in small bundles, which are wrapped in gunny cloth in bales of 20 or 40 bolts each. These bundles are press-packed and bound with iron bands before shipment. Colored goods are first wrapped in tissue paper in packages of five bolts each, and eight of these packages are packed in a wooden box, lined with oiled paper, and bound with iron bands. For shipment to places along the railway, express companies undertake transportation, while shipments to the interior are forwarded by small sailing boats. Transactions are for cash or on credit, accounts being settled three times a year on the usual festival days.

CHAPTER III

SILK REELING AND WEAVING

CHEKIANG has long been famous for its silk industry, goods produced in the Province being sold throughout the country, but since the introduction of rayon, the industry has steadily declined. The following is a brief description of the silk filatures and weaving-mills in the Province:

REELING

Modern silk filatures equipped with reeling-machines were first established in Chekiang in 1913, when the Fu Lin (虎林), Wei Cheng (緯成), Tien Chang (天章), all located at Hangchow, came into existence. These plants were started as weaving-mills, but gradually filature departments were added. In 1922 a branch filature of the Wei Cheng plant was established at Chiahsing, and in the same year the Ching Yun mill (慶雲織綢廠) was opened at Hsiaoshan. Other plants of comparative importance were the Kung Li (公利) and Hsiang Lun (祥綸), Teh-ts'ing, in 1924, the Model Silk Filature No. 1 (第一模範絲廠), Wuhsing, in 1925, the Ching Cheng (慶成), Hangchow, the Shuang Shan Hsing Chi (雙山興記), Haining, and the Hou Sheng (厚生), Chiahsing, in 1926, the Chung Yu (崇裕) Hangchow, in 1928, the Changan (長安), Haining, in 1929, the Silk Co-operative Society (蠶絲合作社), Hsiaoshan, in 1930, and the Kai Yuan (開源), Hangchow, in 1931.

The period from 1924 to 1931 may be regarded as marking the peak of the silk-reeling industry in Chekiang Province. Since 1931, however, owing to the world depression and the keen competition of rayon and Japanese silk, the Chekiang industry has experienced a sharp setback. In 1933 three of the largest silk filatures, Hu Ling, Wei Cheng, and Tien Chang, have suspended operations entirely, while filatures in other districts are either in partial operation or have reduced their capital. The 19 filatures in the Province still in operation are as follows:—

	Location	Organization	Capital	Established
Hangchow Silk Filature ..... (杭州繅絲廠)	Hangchow	Government	$287,660	1929
Ching Cheng (慶成)	"	Sole ownership	50,000	1926
Kai Yuan (開源)	"	" "	30,000	1931
Chung Yu (宗裕)	Hanghsien	Partnership	1,100	1928
Shuang Shan Hsing Chi ..... (雙山興記)	Haining	Corporation	30,000	1926
Chang An (長安)	"	"	50,000	1929
Wei Cheng, Yu Chia Branch.. (緯成公司裕嘉分廠)	Chiahsing	"	3,000,000	1920
Model Filature No. 1 ..... (第一模範絲廠)	Wuhsing	Partnership	100,000	1925
Nanhsun (南浔汽機改良絲廠) ...	"	——	₮80,000	——
Mei Heng Yu (梅恒裕)	"	——	90,000	——
Chiu Lun (久綸)	"	——	$10,000	——
Ching Hsin (競新)	"	——	10,000	——
Kung Li (公利)	Tehts ing	Sole ownership	100,000	1924
Li Nung (利農)	"	Partnership	50,000	1925
Hsiang Lun (祥綸)	"	Sole ownership	200,000	1924
Shao Chi (苕溪)	"	Partnership	100,000	1925

From the above table it will be seen that the capital of the silk filatures in Chekiang is very small. The Wei Cheng mill is the largest, capitalized at $1,000,000, the others having an average capital of $50,000 each. As to equipment, the three mills in Hangchow have 20 cocoon-boiling vats, 332 reeling-machines, 1 cocoon-drying machine, and with a total generating power of 46 h.p. The Chung Yu mill, Hanghsien, has 492 reeling-machines, and two engines generating 19 h.p. The two filatures at Haining are equipped with 471 reeling-machines, the three at Chiahsing have 432 reeling-machines, Tien Cheng, at Haiyen, has 500, and Model Filature No. 1 at Wuhsing has 270 reeling-machines and 72 re-reeling-machines.

The total number of workers employed in the Chekiang silk filatures is 10,358, including 807 in Hangchow, 1,640 in Hanghsien, 1,103 in Haining, 2,244 in Chiahsing, 620 in Haiyen, 2,044 in Wuhsing, and 1,900 in Tehts'ing. The percentage of women workers is 80, and the majority of the operatives are recruited from nearby villages.

The wages paid vary in different localities. In Hangchow a female worker receives 48 cents a day, and a juvenile worker 15. In Haining the average wage for male and female operatives is 50 cents a day, and 25 cents for child workers. Male workers in Chiahsing receive 55 cents a day, females 57 cents, and juveniles 28 cents. The wage for a female worker in Haiyen is 35 cents per day and for a juvenile worker 20 cents, while in Wuhsing male and female workers receive 52 cents a day, and juveniles 30 cents.

SUPPLIES OF RAW MATERIAL

The annual consumption of cocoons by the Chekiang filatures amounts to 25,000 piculs, including 3,300 for Hangchow, 2,500 piculs for Hanghsien, 1,800 piculs for Haining, 4,000 piculs for Chiahsing, 1,500 piculs for Haiyen, 10,000 for Wuhsing, and 4,500 piculs for Tehts'ing. The average price of dried cocoons is about $1,680 and all demands are supplied by local farmers.

SILK PRODUCING CENTRES

Wuhsing, Tehts'ing, Chiahsing, and Hangchow are the four principal producing centers of raw silk in Chekiang Province. The average annual production in Hangchow is 630 piculs, Wuhsing, 1,350 piculs, Tehts'ing, 900 piculs, Chiahsing, 950 piculs, Haining, 600 piculs, Hanghsien, 400 piculs, and Haiyen, 350 piculs, making a total of 5,080 piculs. Owing to the slump in the silk trade, however, the output for 1932 was greatly reduced, the production in Hangchow being 470 piculs, Wuhsing, 1,100 piculs, Tehts'ing, 700 piculs, Chiahsing, 870 piculs, Haining, 600 piculs, Hanghsien, 300 piculs, and Haiyen, 300 piculs, making a total of 4,250 piculs only. The cost of production varies in different localities, the average ranging from Tls. 500 to Tls. 600 a picul.

HOME AND FOREIGN MARKETS

The raw silk produced in Chekiang is both for home use and export to foreign countries. Goods for the domestic market are mostly produced at Shanghai and Hangchow, while the manufacture of export goods is centered in Shanghai. The United States is the largest foreign purchaser, importing about 2,000 piculs a year, and France, which is second on the list of foreign buyers, takes about 400 piculs annually. About 500 piculs are annually consumed in Hangchow, and 1,300 piculs in Shanghai for the domestic trade. First grade silk was sold in 1932 at $1,400 a picul, with $1,000 quoted for second grade, and $700 for third grade. The total production for the whole Province was valued at $3,700,000.

WEAVING-MILLS

The silk-weaving industry in Chekiang is centered at Hangchow and Wuhsing. The first mills established in Hangchow were the Yung Cheng (永成), Ching Cheng (慶成), and Wei Cheng, all organized in 1912, and others are the Hu Lin and Tien Chang, established in 1914, and

Hua Ching (華競), Wen Hsin Heng (文新恆), I Cheng (義成) and Tien Feng (天豐), in 1996-1919, while between 1919 and 1926 over 100 silk weaving-mills were operating in Hangchow. Since 1927, however, trade has experienced a severe slump and a large number of mills were forced to suspend operations. In 1930 some recovery was witnessed, and seven new mills were opened during the year, while in 1931 the number of new mills increased to 15, but two of the largest mills in Hangchow remained closed during this period—the Hu Ling in 1928, and the Wei Cheng in 1929.

In addition to being a silk producing center, Wuhsing is also engaged in weaving. Before the establishment of the Republic the production of *hu chou* (湖綢), a silk fabric of nation-wide fame, amounted to over 200,000 bolts, valued at $3,000,000. The importation of *yeh chi ke* (野鷄葛) from Japan greatly affected the silk weaving industry of Wuhsing, but the introduction a new fabric *hua ssu ke* (華絲葛), a mixture of real and artificial silk, brought about a revival of trade. During 1925 and 1926 the production of *hua ssu. ke* from the 6,000 looms in the whole *hsien* amounted to 600,000 bolts each year, valued at $20,000,000, but since then trade has been again on the decline, until in 1932 the number of looms was reduced to 2,000, including 100 power-looms and 760 iron and wooden in the city, with about 1,200 iron and wooden looms in the country, the annual production amounting to 300,000 bolts only.

PRESENT CONDITIONS

There are now 41 silk weaving-mills operating in the Province, with 24 at Wuhsing and 17 at Hangchow. Their total capital amounts to $560,000, and the total number of operatives employed, 2,800. Particulars are tabulated as follows:—

	Location	Established	Organization	Capital	Workers	Looms
Chi Hua (七華)	Wuhsing	1929	Sole ownership	$ 9,000	33	40*
Yu Sheng (裕盛)	„	1918	Partnership	4,000	79	24*
Yung Lun Chang (永倫昌) ...	„	1920	„	4,000	44	20
Chen Chin Cheng Chang Chi (陳錦成常記)	„	1920	Sole ownership	2,000	31	4* 20
Chen Chin Cheng Ao Chi .... (陳錦成鰲記)	„	1922	„	2,000	27	7* 16
Chen Lung Yun (陳龍雲)	„	1916	„	1,800	28	12
Hua Feng (華豐)	„	1928	Partnership	6,500	22	8 10*
Yu Cheng Sheng Chi ..... (又成生記)	„	1931	„	20,000	24	33
Cheng Hua (增華)	„	1923	„	6,000	51	50 8*
Jui Hsiang (瑞翔)	„	1920	„	3,500	31	24
Hsin Cheng (信成)	„	1930	„	6,000	31	10* 12
Ta Chang (達昌)	„	1920	„	40,000	127	53* 40

*Power-looms.

	Location	Established	Organization	Capital	Workers	Looms
I Cheng (義成)	Wuhsing	1917	Sole ownership	$30,000	114	40*
						38
Hsien Chang (咸章)	„	1920	Partnership	3,000	40	16
Li Sheng (麗生)	„	1918	„	50,000	140	68*
Li Ho (麗和)	„	1920	„	11,500	141	12*
						79
Yung Chang (永昌)	„	1919	„	9,000	94	35*
						44
Jui Ho Hsiang (瑞和祥)	„	1920	„	8,000	42	16
Yu Cheng (又成)	„	1917	„	13,000	96	—
Ta Feng (大豐)	„	1920	„	10,000	120	14*
Ta Feng (New) (大豐新廠) ..	„	1924	„	10,000	40	96
						22*
Hsiang Hua (祥華)	„	1919	„	3,200	32	28*
						12
Tung Chang Ho Chi (同昌合記)	„	1929	„	5,000	30	17*
Li Ho Hsieh Chi (麗和協記) ...	„	1930	„	15,000	90	80

*Power-looms.

	Location	Established	Organization	Capital	Workers	Looms
Tu Chin Sheng (都錦生)	Hangchow	1922	Partnership	$100,000	92	—
Chen Tan (震旦)	„	1928	„	80,000	190	—
Yung An (永安)	„	1929	„	20,000	108	—
Yueh Chang Wen Chi ..... (悅昌文記)	„	1917	„	30,000	150	—
Feng Huang (鳳凰綢廠)	„	1931	„	50,000	120	—
Lieh Feng (烈豐)	„	1925	„	10,000	66	—
Tien Feng (天豐)	„	1919	„	5,000	81	—
Ching Chun (慶春)	„	1931	„	38,000	90	—
Tung Fang (東方)	„	1928	„	15,000	61	—
Chin Yeh (勤業)	„	1931	„	5,000	41	—
Yu Cheng (裕成)	„	1931	„	5,000	44	—
Yung Chang (雲裳)	„	1930	„	6,000	33	—
Lu I (六一)	„	1932	„	4,000	36	—
Hua Ching (華競)	„	1928	„	2,000	32	—
I Chang Hung (怡章鴻)	„	1922	„	5,000	36	—
Wen Hsin Heng (文新恒)	„	1918	„	6,000	81	—
Mei Cheng (美成)	„	1932	„	3,000	37	—

SUPPLIES OF RAW MATERIAL

The materials used in silk weaving consist of raw silk, rayon, and cotton yarn. During 1931 the consumption of rayon amounted to 2,200 piculs, or 59 per cent, raw silk, 1,530 piculs, or 40 per cent, and cotton yarn, 63 piculs, or 1 per cent. Two kinds of raw silk are used, filature and native silk. Filature silk is chiefly shipped from Wusih and Shanghai, in Kiangsu, the 13-15 and 20-22 deniers being most popular, while native silk is chiefly produced locally, with a small portion coming from Shantung, Szechuen, and Wuhu (蕪湖), Anhui Province. Filature silk is bought at about $700 per picul, while native silk sells at from $480 to $500.

PRODUCTION AND PRICES

Many varieties of silk piece-goods are produced in Chekiang, but generally may be classed in two groups—*sheng huo* (生貨) which are dyed after weaving, and *shu huo* (熟貨), which are woven after dyeing. The chief varieties in the *sheng huo* class are *sha* (紗), *ling* (綾), *fang* (紡), *lo* (羅), *ke* (葛), *chuan* (絹) and *ti* (綈), while those in the *shu huo* group are *tuan* (緞) and *chou* (綢). The following table shows the different sizes of the various varieties:—

	Length per Bolt		Width	
	Maximum (feet)	Minimum (feet)	Maximum (feet)	Minimum (feet)
Chou (綢)	65	50	2.4	1.8
Fang	65	48	2.4	1.6
Lo	65	50	2.4	1.6
Tsou	65	55	2.2	2.0
Tuan	70	55	2.2	2.0
Chuan	70	55	2.2	2.0
Ti	65	55	2.2	2.0
Sha	70	55	2.2	2.0
Ke	68	55	2.2	2.0

The total output of silk piece-goods in the Province amounts to 420,000 bolts. The output of Hangchow is about 122,000 bolts, valued at $4,900,000, and that of Wuhsing 300,000 bolts, the latter total being made up as follows:—

	Quantity	Prices per Bolt
Hua ssu ke (華絲葛)	5,000	$13
Hu tsou (湖 縐)	180,000	$20–$50
Pien hao ke (卞奄葛)	20,000	$22
Pi tsou (岦 縐)	10,000	$30
Hua ssu sha (華絲紗)	30,000	$35–$60
Total	300,000	

MARKET

About 30 per cent of the silk piece-goods produced in Chekiang are sold locally, the balance being shiped to outside markets. Shanghai is the chief sales centre for Chekiang piece-goods, taking about 33 per cent of the total, the Straits Settlements coming second with 14 per cent, while between 2 and 3 per cent is shipped to foreign countries. *Sheng huo* is generally sold to districts along the upper Yangtse Valley, while *shu huo* is principally shipped to Shanghai, Tientsin, Peiping, and districts along the lower Yangtse valley.

NATIVE SILK INDUSTRY

The native silk reeling industry was flourishing in Chekiang long before the establishment of modern silk filatures, and Tsatlee silk (輒里絲), produced in Tsilitsun (七里村), Wuhsing, is known throughout the country and abroad. Owing to the keen competition of artificial silk and the rapid development of modern methods of silk reeling, the native industry has suffered a severe slump. In 1922 the price of native silk was $103 for 100 *liang* (兩), but fell to $48 in 1924, and to $30 in 1932. Thus this once-famous industry of Chekiang Province is on the verge of extinction unless some effective remedy is found.

According to recent investigation, the total annual production of native silk in the Province amounts to 85,260 piculs, with Wuhsing, Hanghsien, and Chiahsing as the principal producing centers. The annual production in each district is as follows:—

	Piculs
Yüch'ien	164
T'unghsiang	3,691
Wuhsing	18,327
Shangyü	178
Yühang	445
Chiahsing	14,880
Ch'enghsien	1,532
Ch'anghua	120
Chiahsing	3,400
Wuk'ang	471
Haining	7,810
Linan	2,516
Ts'ungteh	1,245
Hsinch'ang	730
Haiyen	2,884
Chuchi	3,812
Tehts'ing	1,286
P'inghu	1,169
Tunglu	90
Hsiaofeng	260
Hsiaoshan	1,497
Fenshui	245
Fuyang	600
Shaohsing	541
Chiashan	170
Anchi	198
Hsinteng	470
Hanghsien	14,930
Other districts	800
Total	85,260

PROCESS OF REELING

In reeling native silk crude wooden frames are used. The cocoons are either fresh or baked over a fire, and the silk reeled is "coarse" or "fine". The average daily reeling capacity of each worker is from 40 to 50 ounces for "coarse" silk, and 15 ounces for "fine." The percentage of *chiao che* (繅折), or loss from reeling, varies according to the quality of the cocoons, ranging from 10 to 17 catties. Reeling conditions in various *hsien* are tabulated as follows:—

	Kind of Silk Reeled	Cocoons Used	Daily Output per Worker (Ounces)	Lost in Reeling (catties)
Yüch'ien	"Fine" & "Coarse"	Baked	30	11–12
Ch'anghua	"Coarse"	Fresh	17–18	11–12
T'unghsiang	"Fine" & "Coarse"	"	16 (Fine)	
			40 (Coarse)	10–11
Ch'anghsing	"Fine" & "Coarse"	Fresh or baked	25	10–11
Wuhsing	"Fine" & "Coarse"	Fresh	50 (Coarse)	10–11
Wuk'ang	"Coarse"	Baked	25	12–14
Shangyü	"Coarse"	Baked	15	13–17
Haining	"Coarse" & "Fine"	Fresh	30 (Coarse)	12–13
			15 (Fine)	
Yühang	"Coarse"	Fresh	40	11–12
Linan	"Coarse" & "Fine"	Fresh or boiled	20 (Fine)	10–11
			40 (Coarse)	
Chiahsing	"Coarse" & "Fine"	Fresh	18 (Fine)	11–12
			30 (Coarse)	
Ts'ungteh	"Coarse" & "Fine"		18 (Fine)	11–12
			40 (Coarse)	

	Kind of Silk Reeled	Cocoons Used	Daily Output per Worker (Ounces)	Lost in Reeling (catties)
Ch'enghsien	"Coarse"	Fresh	20	11–12
Hsinch'ang	"Coarse"	Fresh	20	11–12
Haiyen	"Coarse"	Fresh	30	11–12
Fenshui	"Coarse"	Fresh	12	11–12
Chuchi	"Coarse"	Fresh	30	11–12
Fuyang	"Fine"	Fresh	30	11–12
Tehts'ing	"Coarse" & "Fine"	Fresh	20	11–12
Shaohsing	"Coarse"	Fresh	20	11–12
P'inghu	"Coarse" & "Fine"	Fresh	30	12–13
Chiashan	"Coarse" & "Fine"	Fresh	30	12–13
T'unglu	"Coarse"	Fresh or baked	20	12–13
Anchi	"Coarse" & "Fine"	Fresh	20	12–13
Hsiaofeng	"Coarse" & "Fine"	Fresh	20	12–13
Hsinteng	"Coarse"	Fresh	18	12–13
Hsiaoshan	"Coarse" & "Fine"	Fresh	25	10–11
Hanghsien	"Coarse" & "Fine"	Fresh	30	10–11

COMMERCIAL TRANSACTIONS

Business in native silk is chiefly transacted through *tu ssu hang* (土絲行) or native silk brokers, but not infrequently purchasing agents are despatched by weavers in various cities to buy raw silk direct from farmers. Native silk produced in eastern Chekiang is chiefly distributed through Shaohsing brokers, while that produced in Western Chekiang is sold to local weavers or shipped to Nanking and Soochow, in Kiangsu Province. Wuhsing is the centre for native silk brokers, over 80 firms being established there. The following is a list of the principal native silk brokers operating in the Province, together with their capital and annual business turnover:—

	Location	Capital	Turnover
I Chi (義 記)	Haining	——	$120,000
Ying Yuan (盈源)	,,	——	50,000
Heng Yu (恒 有)	,,	——	20,000
Tien Lun (天 綸)	,,	——	50,000
Heng Yuan (恒 源)	,,	——	50,000
Yung Yu (永 餘)	,,	——	230,000
Heng Feng (恒 豐)	,,	——	217,000
Chang Sheng (昌 盛)	,,	——	218,000
Feng Ho Tai (豐 和 太)	,,	——	78,000
Li Chang Hsieh (利 昌 協)	,,	——	54,000
Wei Yuan Hsin (緯 源 新)	,,	——	102,000
Lu Chi (祿 記)	,,	——	60,000
Cheng Chi (成記)	,,	——	12,000
Tai Chang Chen (泰 昌 振)	,,	——	48,000
Fu Hsing Lun (復 興 綸)	,,	——	18,000
Yung Feng Li (永 豐 利)	,,	——	48,000
Lien Chi (聯 記)	,,	——	18,000
Kuang Feng Sheng (廣 豐 蚌)	,,	——	79,000
Tung I (同 益)	,,	——	150,000
Ching Chun (競 存)	,,	——	20,000
Chien Chi (乾 記)	,,	——	12,000
Chi Chang (其 昌)	,,	——	12,000
I Tai (義 太)	,,	——	6,000
Cheng Chi (正記)	,,	——	12,000
Feng Chi (豐 記)	,,	——	131,000
Hsieh Chang Hsiang (洽 昌 祥)	,,	——	200,000
Yuan Yu Ting (源 餘 鼎)	,,	——	72,000
Teh Chi (德 記)	,,	——	12,000

	Location	Capital	Turnover
Yuan Tai (源 太)	Haining	——	$90,000
Yuan Chang (源 昌)	„	——	12,000
Hung Chi (宏 記)	„	——	12,000
Lun Chang (綸 昌)	„	——	10,000
Chang Chi (昌 記)	„	——	48,000
Ma Heng Chang (馬恆昌)	Hanghsien	$1,000	300,000
Hsin Ta (新 大)	„	1,600	200,000
Chen Sheng Ho (陳勝和)	„	5,000	100,000
Chun Chi (春 記)	„	2,000	65,000
Shao Shẹn Chi (邵愼記)	„	1,000	60,000
Hung Chi (宏 記)	„	5,000	58,000
Tsai Heng Teh Lung Chi (蔡恆德隆記)	„	1,000	50,000
Chou Tai Chi (周泰其)	„	1,000	50,000
Wang Teh Chang (王德昌)	„	600	50,000
Hsieh Ta (協 大)	„	5,000	50,000
Hsu Pao Ho (徐寶和)	„	5,600	50,000
Ni Wang Chun (倪禹春)	„	1,000	50,000
Yuan Ta (元 大)	„	1,200	48,000
Yuan Ho (元 和)	„	1,800	40,000
Feng Ta (豐 大)	„	1,000	40,000
Tsai Heng Teh (蔡恆德)	„	2,000	34,000
Lung Chang Yu (隆昌餘)	„	500	30,000
Ta Yu Feng (大有豐)	„	1,000	30,000
Chi Chang Chun (其昌椿)	Wuhsing	——	25,500
I Chi (宜 記)	„	——	19,000
Tung Yuan Sheng (同元生)	„	——	12,000
Chen Yuan (振 源)	„	——	4,000
Li Chi (利 記)	„	——	6,000
Sheng Tai (生 泰)	„	——	10,000
Chien Chi (鑑 記)	„	——	9,600
I Shun (億 順)	„	——	4,600
Chien Ming Chi (錢明記)	„	——	5,500
Tai Sheng Hsiang (泰昇祥)	„	——	28,500
Chang I Feng (章義豐)	„	——	17,250

	Location	Capital	Turnover
Li I (利 谷)	Wuhsing	——	$10,500
Ti Jen (悌 仁)	,,	——	12,000
Yung Sheng (永 昇)	,,	——	16,000
Yuan Kang (元 康)	,,	——	30,000
Chi Kang Jung (濟 康 源)	,,	——	11,000
Yueh Chang (悅 昶)	,,	——	13,000
I Chang (怡 昶)	,,	——	25,000
Chien Sheng (乾 盛)	,,	——	28,000
Wu Chin Chi (吳 錦 記)	,,	——	10,000
Tung Yuan Fu (同 源 福)	,,	——	10,000
I Yuan Ta (億 元 大)	,,	——	13,000
Yuan Yu (元 裕)	,,	——	25,000
Li Sheng (利 盛)	,,	——	9,000
Chiu Yu (久 餘)	,,	——	14,000
Lu Yuan Tai (陸 源 泰)	,,	——	22,000
Hung Chang Sheng (宏 昌 盛)	,,	——	20,000
Hsiang Tai Ho (祥 泰 和)	,,	——	16,000
Yu Chang (餘 昌)	,,	——	13,000
Chao Ho Sheng (趙 合 盛)	,,	——	7,500
Hsin Ta (信 達)	,,	——	9,000
Hung Chang (鴻 昌)	,,	——	7,000
Chien Yuan (乾 源)	,,	——	9,000
Ta Lung Hsing (大 隆 興)	,,	——	2,700
I Hsing (義 興)	,,	——	3,000
Ting Chang (鼎 昌)	,,	——	20,000
I Kang Yuan (億 康 源)	,,	——	20,000
Teh Chang Hsiang (德 昌 祥)	,,	——	30,000
Sheng Sheng (蛙 盛)	,,	——	20,000
Hsin Yu (信 餘)	,,	——	30,000
Yu Kang (豫 康)	,,	——	13,000
Chen Yien (振 衍)	,,	——	7,000
Chen Ho (震 和)	,,	——	9,000
Kuang I (廣 益)	,,	——	30,000
Chin Yuan (晉 源)	,,	——	12,000
Chen Tai (成 泰)	,,	——	3,800
Heng Feng Sheng (恆 豐 盛)	,,	——	6,900
Tai Kang (泰 康)	,,	——	4,600

	Location	Capital	Turnover
Chang Yuan Sheng (張源盛)	Wuhsing	——	$10,000
Jen Tai (仁泰)	,,	——	5,000
Hsiang Yuan (祥源)	,,	——	4,000
Tung Yuan Chien (同元鑑)	,,	——	6,000
Sheng Chang (姓昌)	,,	——	5,000
Wang Sheng (萬盛)	,,	——	15,000
Tai Kang Yuan (泰康源)	,,	——	30,000
Sheng Tai (姓泰)	,,	——	4,000
Chien Chang (乾昌)	,,	——	10,000
Hsiang Chang (祥昌)	,,	——	10,000
Hsia Ta (洽大)	,,	——	4,000
Hung Ho (洪和)	,,	——	20,000
Tsui Yu (萃餘)	,,	——	30,000
Yu Sheng (裕盛)	,,	——	16,000
Wei Chi (慰記)	,,	——	8,000
Chu Yuan (榘源)	,,	——	7,000
Heng Tai (亨泰)	,,	——	20,000
Chun Chi (春記)	,,	——	12,000
Sheng Ho Sheng (生和盛)	,,	——	12,000
Wang Tsui (萬萃)	,,	——	8,000
Tung Ho Yuan (同和源)	,,	——	8,000
Hsu Chin Chi (徐金記)	,,	——	8,000
Hsiang Sheng (祥盛)	,,	——	6,000
Li Yuan (泖源)	,,	----	4,000
Sheng Mao Sheng (沈卯生)	,,	——	4,000
Ho Chi (合記)	,,	——	4,000
Sheng Ching Chi (沈慶記)	,,	——	4,000
Cheng Tai Hsiang (誠泰祥)	,,	——	4,000
Chiu Sheng (久盛)	,,	——	2,000
Cheng Yung Chiao (陳雲樵)	,,	——	3,000
Sheng Hao (姓號)	,,	——	3,000
Wang Feng (萬豐)	,,	——	3,000
Hsu Yung Lin (許永林)	,,	——	4,000
Jung Kang (榮康)	,,	——	3,000
I Ta (億大)	,,	——	2,000

	Location	Capital	Turnover
Hsin Jen (信 仁)	Wuhsing	——	$20,000
Hsieh Hsing Chang (協興昌)	„	——	20,000
Chien Kang (乾 康)	„	——	30,000
Fu Lung (復 隆)	„	——	20,000
Ching Feng (慶 豐)	„	——	30,000
Heng Sheng (恆 昇)	Chuchi	——	130*
Yuan Tai I (源 泰 怡)	„	——	120*
Chin Ho Cheng (錦和承)	„	——	120*
Chien Yuan 乾 源)	Shaohsing	——	100*
Hsien Tai (咸 泰)	„	——	100*
I Kang (益 康)	„	——	100*
Yuan Mou (源 茂)	„	——	300*
Fu Ta Ho (復 大 和)	Haiyen	1,000	——
Chin Chang (晉 昌)	„	10,000	——
Hsieh Yuan (協 源)	„	1,000	——
I Feng (義 豐)	„	800	——
Yu Feng (裕 豐)	„	1,000	——
Fou Chen (阜 成)	Fuyang	800	$1,000
Yueh Ta Fu (悅 大 福)	Ts'ungteh	10,000	——
Yuan Cheng (源 成)	„	5,000	——
Kung Yuan Chang (公 源 祥)	„	1,000	——
Mou Sheng (懋 陞)	„	1,000	——
Kung Hsin Shun (公 信 順)	„	1,000	——
Kung Yu Ho (公 餘 和)	„	1,000	——
Chiu Cheng (久 成)	„	5,000	——
Heng Ho (恆 和)	„	1,000	——
Sheng Jun (升 潤)	„	1,000	——
Teh Yung Heng (德 永 恆)	„	1,000	——
Ta Feng (大 豐)	„	5,000	——
Yang Teh Ta (楊 德 大)	Linan	1,000	10,000
Teh Kuang Yuan (德 廣 源)	„	1,500	20,000
Yu Chi (裕 記)	„	1,500	20,000
Tung Tai (同 泰)	Yuhang	5,000	45,000
I Chang (亦 昌)	„	1,000	16,000
Sheng Mao Hsing (生 茂 興)	T'unghsiang	——	20,000
Kung Tai (公 泰)	„	——	30,000

*piculs.

	Location	Capital	Turnover
Hsing Mou Kung (興茂公)	T'unghsiang	——	$20,000
Hsing Mou (興茂)	„	——	15,000
Feng Tung Yuan (馮同源)	„	——	——
Yu Chang (裕昌)	„	——	——
Teh Sheng Hsiang (德生祥)	„	——	——
Chang Chi (昌記)	„	——	——
Wu Mao Hsin (吳茂新)	„	——	——
Hsin Tai (信太)	„	——	——
Sheng Heng (盛恆)	Chiahsing	——	10,000
Sheng Chang (盛昌)	„	——	15,000
Chen Hsing (振興)	„	——	25,000
Tung Sheng Kung Chi (同盛公記)	„	——	40,000
Teh Chi (德記)	„	——	20,000
Yu Shun (裕順)	„	——	20,000
Ting Sheng (鼎盛)	„	——	8,000
Ho Chi (鴻記)	„	——	10,000
Hsing Chi (興記)	„	——	10,000
Fu Shun I Chi (復順義記)	„	——	18,000
Yang Yuan Chi (楊元記)	„	——	24,000
Liu Cheng Shun (劉正順)	„	——	22,500
Shen Wan Shun (沈萬順)	„	——	16,000
Kang Heng Lung (康恆隆)	„	——	26,000
Tai Chi (泰記)	„	——	6,000
Lu Chi Chi (呂梓記)	„	——	4,000
Liu Chen Shun (wetern branch)	„	——	7,000
Li Chi (利記)	„	——	3,500
Teh Chi (德記)	„	——	7,000
Sheng Chi (陞記)	„	——	6,000

COST OF PRODUCTION

As the cost of producing native silk is very high, little profit is made by the reelers, and owing to the slump in prices silk is sometimes actually sold below cost. The following table shows the cost of producing 100 ounces of native silk in various *hsien*, together with the respective profit or loss:—

	COSTS.					PROCEEDS.			LOSS OR PROFIT
	Cocoons	Tax	Wages	Fuel & Miscellaneous	Total	Silk	By-products	Total	
Yüch'ien	$18.00	$0.10	$3.00	$1.00	$22.10	$30.00	$1.00	$31.00	$8.90+
Ch'anghua	17.00	0.10	4.00	1.00	22.10	25.00	1.00	26.00	3.90+
T'unghsiang	21.00	0.10	4.00	1.50	26.60	27.00	2.00	29.00	2.40+
Ch'anghsing	22.00	0.10	5.00	1.50	28.60	28.00	2.50	30.50	1.90+
Wuhsing	22.00	0.10	3.00	2.00	27.10	32.00	3.00	35.00	7.90+
Wuk'ang	21.00	0.10	3.00	1.50	25.60	28.00	2.00	3.00	4.40+
Shangyü	20.00	0.10	5.00	1.00	26.10	27.00	2.00	29.00	2.90+
Haining	23.00	0.10	3.00	1.50	27.60	30.00	2.50	32.50	4.90+
Yühang	24.00	0.10	3.00	1.50	28.60	30.00	2.00	32.00	1.40+
Linan	24.00	0.10	3.00	1.00	28.10	30.00	2.00	32.00	1.90+
Chiahsing	23.00	0.10	3.00	2.00	28.10	30.00	2.50	32.50	4.40+
Ts'ungteh	21.00	0.10	3.00	1.50	25.60	28.00	2.00	30.00	4.40+
Ch'enghsien	24.00	0.10	5.00	1.00	30.10	30.00	2.50	32.50	2.40+
Hsinch'ang	22.00	0.10	4.00	1.00	27.10	30.00	2.00	32.00	4.90+

	COSTS.					PROCEEDS.			LOSS OR PROFIT
	Cocoons	Tax	Wages	Fuel & Miscellaneous	Total	Silk	By-products	Total	
Haiyen	21.00	0.10	3.00	1.50	25.60	30.00	2.00	32.00	6.40+
Fenshui	18.00	0.10	5.00	1.00	24.10	20.00	2.50	22.50	4.20—
Chuchi	22.00	0.10	4.00	1.00	27.10	30.00	2.00	32.00	4.90+
Fuyang	20.00	0.10	5.00	1.00	26.10	30.00	2.00	32.00	5.90+
Tehts'ing	21.00	0.10	4.00	1.50	26.60	28.00	2.00	30.00	3.40+
Shaohsing	22.00	0.10	4.00	1.50	27.60	30.00	2.50	32.50	4.90+
P'inghu	19.00	0.10	3.00	1.50	23.60	27.00	2.00	29.00	6.40+
Chiashan	19.00	0.10	3.00	1.50	23.60	27.00	2.00	27.00	6.40+
T'unglu	16.00	0.10	5.00	1.00	22.10	20.00	2.00	22.00	0.10—
Anchi	18.00	0.10	4.00	1.00	23.10	25.00	2.00	29.00	6.40+
Hsiaofeng	18.00	0.10	4.00	1.00	23.10	25.00	2.00	27.00	3.90+
Hsinteng	17.00	0.10	5.00	1.00	23.10	25.00	2.00	27.00	3.90+
Hsiaoshan	24.00	0.10	3.00	1.50	28.60	30.00	2.50	32.50	3.90+
Hanghsien	24.00	0.10	3.00	2.00	29.10	31.00	2.50	33.50	4.40+

	COSTS.					PROCEEDS.			LOSS OR PROFIT
	Cocoons	Tax	Wages	Fuel & Miscellaneous	Total	Silk	By-products	Total	
Yüch'ien	$18.00	$0.10	$3.00	$1.00	$22.10	$30.00	$1.00	$31.00	$8.90+
Ch'anghua	17.00	0.10	4.00	1.00	22.10	25.00	1.00	26.00	3.90+
T'unghsiang	21.00	0.10	4.00	1.50	26.60	27.00	2.00	29.00	2.40+
Ch'anghsing	22.00	0.10	5.00	1.50	28.60	28.00	2.50	30.50	1.90+
Wuhsing	22.00	0.10	3.00	2.00	27.10	32.00	3.00	35.00	7.90+
Wuk'ang	21.00	0.10	3.00	1.50	25.60	28.00	2.00	3.00	4.40+
Shangyü	20.00	0.10	5.00	1.00	26.10	27.00	2.00	29.00	2.90+
Haining	23.00	0.10	3.00	1.50	27.60	30.00	2.50	32.50	4.90+
Yühang	24.00	0.10	3.00	1.50	28.60	30.00	2.00	32.00	1.40+
Linan	24.00	0.10	3.00	1.00	28.10	30.00	2.00	32.00	1.90+
Chiahsing	23.00	0.10	3.00	2.00	28.10	30.00	2.50	32.50	4.40+
Ts'ungteh	21.00	0.10	3.00	1.50	25.60	28.00	2.00	30.00	4.40+
Ch'enghsien	24.00	0.10	5.00	1.00	30.10	30.00	2.50	32.50	2.40+
Hsinch'ang	22.00	0.10	4.00	1.00	27.10	30.00	2.00	32.00	4.90+

	COSTS.					PROCEEDS.			LOSS OR PROFIT
	Cocoons	Tax	Wages	Fuel & Miscellaneous	Total	Silk	By-products	Total	
Haiyen	21.00	0.10	3.00	1.50	25.60	30.00	2.00	32.00	6.40+
Fenshui	18.00	0.10	5.00	1.00	24.10	20.00	2.50	22.50	4.20—
Chuchi	22.00	0.10	4.00	1.00	27.10	30.00	2.00	32.00	4.90+
Fuyang	20.00	0.10	5.00	1.00	26.10	30.00	2.00	32.00	5.90+
Tehts'ing	21.00	0.10	4.00	1.50	26.60	28.00	2.00	30.00	3.40+
Shaohsing	22.00	0.10	4.00	1.50	27.60	30.00	2.50	32.50	4.90+
P'inghu	19.00	0.10	3.00	1.50	23.60	27.00	2.00	29.00	6.40+
Chiashan	19.00	0.10	3.00	1.50	23.60	27.00	2.00	27.00	6.40+
T'unglu	16.00	0.10	5.00	1.00	22.10	20.00	2.00	22.00	0.10—
Anchi	18.00	0.10	4.00	1.00	23.10	25.00	2.00	29.00	6.40+
Hsiaofeng	18.00	0.10	4.00	1.00	23.10	25.00	2.00	27.00	3.90+
Hsinteng	17.00	0.10	5.00	1.00	23.10	25.00	2.00	27.00	3.90+
Hsiaoshan	24.00	0.10	3.00	1.50	28.60	30.00	2.50	32.50	3.90+
Hanghsien	24.00	0.10	3.00	2.00	29.10	31.00	2.50	33.50	4.40+

CHAPTER IV

BLEACHING, DYEING AND PRINTING

THE ART of bleaching and dyeing was practised very many years ago, but little progress has been made, and most of the dyeing-works in Chekiang still employ the centuries' old methods, those following more up-to-date ways being of comparatively recent origin. Dyeing-works are known as *jan fang* (染 坊), and the first to be established in the Province was the Ch'ien T'ai (乾 泰) in Hangchow, established in the early part of the 19th century with the T'ung Ch'ang Sheng (同 昶 昇), Yü Yuan (裕 源), Yuan Ta (元 大), Jen Ch'ang (仁 昌), Fu Sheng (復 盛), Huang Yuan Hsing (黃 元 興), and Chü Ch'ang (聚 昌), following. All these concerns, however, are the old-style *jan fang*, and are operated on a small scale. The first modern-style dyeing-works in the Province was the I Ta (義 大), opened in 1919 in Hangchow, followed in 1923 by the Kung Ta (公 大) and Ch'uan Ta (全 大), and at present there are 12 such works operating in Chekiang. With the introduction of modern methods of bleaching and dyeing, the old *jan fang*, have lost their importance, and many have been forced out of business.

The exact number of bleaching and dyeing enterprises is not known, as many of these works are operated on a small scale and with limited capital. In Hangchow, the centre of the silk piece-goods industry and where there are also many cotton weaving and knitting mills, there are over 180 bleaching and dyeing works, roughly divided into seven categories, as follows:—

Works whose main business is dyeing, the oldest type, of which there are 21;

Works specializing in dyeing yarns, numbering 68;

Worws refining fine quality silk goods, doing dyeing as a secondary business, about 12 in number;

Works using old-style methods of refining and dyeing, 18 in number;

Works printing piece goods, only one concern is in this category;

Laundries who do dyeing as a secondary business, numbering about 60.

Concerns engaged both in weaving and dyeing, form the largest of all groups. There are four mills of this kind in Hangchow—the Ta Feng Sheng Chi (大豐盛記), Chiu Hua Yung (九華永), Chen Hua (振華) and the Ta Tung Chang Chi (大同昌記), with capital ranging from $5,000 to $20,000.

It is estimated that the total capital of the bleaching and dyeing works in Hangchow amounts to over $170,000, and the annual volume of business is about $1,200,000, but with the few exceptions of the modern works, they are poorly equipped. The folowing is a list of the bleaching, dyeing, and printing-works in Chekiang:—

BLEACHING, DYEING AND PRINTING WORKS IN CHEKIANG

Mill	Location	Capital	Value of Annual Business
Ta Feng Sheng Chi (大豐盛記)	Hangchow	$20,000	$250,000
Chiu Hua Yung (九華永)	"	20,000	180,000
Chen Hua (振華)	"	5,000	92,000
Ta Tung Chang Chi (大同昌記)	"	8,000	86,010
Kung Ta (公大)	"	5,000	40,000
Yuan Ta (元大)	"	3,300	24,000
Chiu Ho (九和)	"	5,000	15,000
Ta Ta (大達)	"	4,000	15,000
Ta Chang Yuan (大章元)	"	3,000	15,000
Ta Hua (大華)	"	3,000	14,000
I Chi (益記)	"	5,000	13,000

Mill	Location	Capital	Value of Annual Business
Shou Lung Chang (壽隆昌)	Hangchow	$3,000	$13,000
Hung Ta (洪大)	,,	2,600	12,000
Yuan Mao (元茂)	,,	2,000	8,000
Kung I (公益)	,,	2,800	7,200
Yen Ho (鹽和)	,,	2,000	7,000
Kao Tsun Chang (高純昌)	,,	2,000	7,000
Heng Jui Chang (恒瑞昌)	,,	1,000	7,000
Chien Tai (乾泰)	,,	200	7,000
Jen Chang (仁昌)	,,	400	5,800
Kung Ho (公和)	,,	1,500	5,000
I Feng (義豐)	,,	1,000	5,000
Huang Yuan Hsing (黃元興)	,,	1,000	5,000
Chu Yuan (聚源)	,,	500	5,000
Ta Chang (大昌)	,,	280	5,000
Cheng Chi (正記)	,,	200	5,000
Heng Ho (恒和)	,,	200	5,000
Chiang Tai Chang (姜泰昌)	,,	300	4,800
Teh Chang (德昌)	,,	1,000	4,400
Hua Hsin (華新)	,,	800	4,200
Yu Yuan (裕源)	,,	1,200	4,000
Yuang Chang (元昌)	,,	1,000	4,000
I Ta (義大)	,,	1,000	4,000
Hua Cheng (華成)	,,	400	4,000
Tsun Sheng (春生)	,,	400	4,000
Tung Hsing (同興)	,,	180	4,000
Tung Chang Sheng (同昶昇)	,,	2,300	3,800
Hsiu Hua (茹花)	,,	800	3,800
Hua Cheng (化成)	,,	350	3,800
Yu Teh Hsin (俞德新)	,,	200	3,600
Wu Yuan Li (吳元利)	,,	1,000	3,500
Ching Hsiang (慶祥)	,,	1,000	3,000
Hsieh Chang (協昌)	,,	1,000	3,000
Hsin Yuan (信源)	,,	600	3,000
Hua Cheng (華成)	,,	600	3,000
I Tai (義泰)	,,	1,000	2,800

Mill	Location	Capital	Value of Annual Business
Lao Yung Ho (老永和)	Hangchow	$ 800	$ 2,800
Ju Hsin (如 新)	,,	250	2,800
Yu Cheng Ho Chi (裕成和記)	,,	500	2,700
Tsai Chang (采 彰)	,,	1,000	2,500
Hua Hsin (華 新)	,,	1,000	2,500
Feng Yu Ho (馮 裕 和)	,,	800	2,500
Chia Shun (洽 順)	,,	500	2,500
Chuan Chang (全 昌)	,,	500	2,500
Yueh Lai Sheng Chi (悅來勝記)	,,	400	2,500
Pao Ta (保 大)	,,	300	2,500
Chuan Ta (全 大)	,,	1,000	2,200
Tai Chang (泰 昌)	,,	500	2,200
Yen Yen (鹽 頌)	,,	700	2,000
Hsieh Chang (協 昌)	,,	500	2,000
Mao Tung (茂 東)	,,	400	2,000
Fu Ta (福 大)	,,	300	2,000
Tung Hsin (同 新)	,,	200	2,000
Tien I (天 一)	,,	160	2,000
Ta Chung Hua (大 中 華)	,,	2,000	1,000
122 others	,,	49,860	201,575
Ta Feng (達 豐)	Yungchia	1,000	12,330
Kuang Ming (廣 明)	,,	1,000	3,330
Chen Yeh (振 業)	,,	1,000	3,330
Hsu Hsin Ho (徐 信 和)	,,	750	2,500
Hsu Wan Hsing (徐 萬 興)	,,	500	1,670
Kung I (公 一)	,,	500	1,670
Tung Hsing Ho Chi (同興合記)	,,	500	1,670
Chang Tsai Hua (張 采 華)	,,	500	1,670
Yu Tung Hsing (裕 東 興)	,,	500	1,670
Hua Feng (華 豐)	,,	500	1,670
Su Yung Hsing (蘇 永 興)	,,	500	1,670
Chu Shun Fa (朱 順 發)	,,	500	1,670

Mill	Location	Capital	Value of Annual Business
Yuan Tai (源 泰)	Yungchia	$ 500	$ 667
Hsin Jui Yu (新瑞裕)	Hsinteng	——	600
Tung Shun (同 順)	Chiashan	500	——
Yung Hsing (永 興)	„	500	——
Hung Ta (洪 大)	„	500	——
Tung Hsing (同 興)	„	150	——
Chiu Ta Hsiang Chi (久大祥記)	„	260	——
I Ta (益 大	„	200	——
Hua Li (華 麗)	„	200	——
Tung Hsing (同 興)	„	150	——
Hsu Kung Yu (徐公裕)	T'unglu	——	500
Shun Lung Tai (順隆泰)	„	——	500
Li Hua (麗 華)	„	——	500
Hung I (宏 益)	„	——	500
Wan Yuan Hsiang (萬源湘)	Fenshui	——	1,000
Wei Kuang Chang (魏廣昌)	Lishui	——	1,000
Chen Yung Hsing (陳永興)	„	——	1,000
Chen Sung Chi (陳松記)	„	——	1,000
Chiang Wei Yuan (江渭源)	„	——	1,000
Hsieh Yuan Chang (謝源昌)	„	——	1,000
Liang Hung Chang (梁宏昌)	„	——	1,000
Hu I Ta (胡義大)	Chinyun	——	1,000
Tung Ta Yu (同大有)	„	——	1,000
Shih I Ho (施益和)	„	——	1,000
Ho Hsing (合 興)	„	——	1,000
20 others	„	——	10,000
20 mills	Sungyang	——	32,400
Chen Fou Cheng (陳阜成染坊)	Shuishang	300	600
10 mills	Lungchuan	——	20,000

Mill	Location	Capital	Value of Annual Business
Chang Wan Feng (章萬豐)	Yunho	——	$ 600
Chang Hung Yuan (章宏源)	„	——	600
Huang Shen Chi (黃森記)	„	——	600
Tung I Ho (同義和)	„	——	600
Tung Fu Yuan (同福源)	„	——	600
Wu Yu Feng (吳裕豐)	„	——	600
Tsao Cheng Hsing (曹正興)	Hsuanp'ing	1,000	3,500
Hsieh Ho (協和)	„	1,000	3,000
Chen Yung Hsing (陳永興)	„	500	1,700
Tsao Yung Ta (曹永大)	„	400	1,500

RAW MATERIALS

The most important raw materials used in bleaching and dyeing are bleaching powder, dyes, and hydrochloric and sulphuric acids, all imported from abroad, chiefly from Germany, with shipments also from Great Britain, United States, Japan, and Switzerland. Before the introduction of imported chemical dyes into the industry, vegetable dyes were used and about 70 per cent of Chinese vegetable indigo was used by the dyeing works. Large quantities of Chinese indigo were also exported thirty years ago, but since the invention of artificial indigo the export of the Chinese vegetable product has almost entirely ceased. On the other hand, the import of German artificial indigo has increased enormously; the quantity imported in 1902 was only 3,625 piculs, valued at 131,224 Haikuan taels, while in 1913 the total was 314,268 piculs, valued at Hk. Tls. 9,628,670, an increase of about eight times within ten years. That the increase in the volume of this trade has not ceased is shown by the value of the import in 1931, Hk. Tls. 17,424,568, excluding aniline dyes, sulphur black, and others, which were also imported in large quantities. The quantity of dyes consumed by bleaching and dyeing works in Hangchow alone is about 55,000 catties a year,

valued at about $280,000. Among the colours used blue, grey, and red are the most popular.

Vegetable dyes are made extensively in Chinhua and Chuchow in Chekiang, Nanhsiang (南翔), Huangtu (黃渡), in Kiangsu, Fatshan (佛山) in Kuangtung, Lishih (離石) and Huohsien (霍縣) in Shansi, Loping (樂平) in Kiangsi, and the provinces of Anhui, Hupeh, Szechuan, Yunnan, Kuichow, and the Three Eastern Provinces. With the general adoption of artificial dyestuffs, Chinese natural dyes are no longer used, except in the interior, and the consumption of natural indigo, safflower (紅花, *carthamus tinctorius* L.), *sapanwood* (蘇木, *caesalpima Sappan* L.), turmeric (薑黃, *Curcuma longa*), *yu chin* (鬱金, *Curcuma longa* var. *macropyhll*, Mrq.) and nutgalls have decreased by 70 per cent. Experiments by an American chemist have shown that Chinese dyes are very durable, but owing to difficulties in application as well as comparatively high prices, their position on the market has been gradually supplanted by imported materials. A certain amount of the hydrochloric and sulphuric acids and bleaching powder used in dyeing and printing are supplied by the Tien Yuan Electro-Chemical Works (天原電化廠), Kai Chen Acid Manufacturing Company (開成造酸公司) in Shanghai, and the Teh Li Acid Manufacturing Company (得利三酸廠) and Po Hai Industrial Chemical Works (渤海化學工業社) in Tientsin, but the output from the last two is very small.

PRODUCTION

In dyeing cotton yarn, it is first cleansed by boiling in alkali before being mercerised, and then put into an acid solution to be neutralized. Then bleaching or dyeing is applied according to the colour desired.

Fabrics of fine quality must be cleaned and bleached before dyeing. The cleaning is done by boiling the fabrics with an alkaline solution in soft water, after which they undergo various finishing processes.

In dyeing cotton piece-goods the fabrics first have the nap removed, are then dipped in water to remove dirt, and

lastly dyed in the same way as yarn. Before being bleached the fabric is boiled from two to four hours and rinsed twice. After being bleached it is neutalized by being dipped in acid and then dried, stretched, pressed, measured and packed.

Printing on silk fabrics is usually done by hand stencilling with a mixture of dye and paste made with glutinous rice. If different colours are wanted, the process has to be repeated for each colour and the background tint is not applied until the printing has dried. In order to keep the colours from fading, the fabric is steamed in a box and then cleaned in running water, the time required varying according to the quality of the fabric.

It is not possible to secure reliable figures as to the actual volume of business done by bleaching and dyeing works, but a conservative estimate can be based on the number of pieces of cotton and silk piecegoods bleached and dyed in a year, slightly less than a million pieces, of which the four weaving and dyeing mills handle about 150,000 pieces of cotton goods, and the remaining 500,000 cotton and 250,000 silk pieces are handled by the other works. The total value of the work done annually is about $1,000,000, over half of which is shared by the four weaving and dyeing mills.

The cost of dyeing varies with the colours desired. Vermillion and indigo are the most expensive, costing about $3 per piece of cloth dyed, with dark blue next, about $2.70, red and green, from $1.10 to $1.40, and grey from 30 to 50 cents.

Prices for dyeing silk stuffs are lower, because of the smaller quantity of dye required. Dyeing in dark shades is more expensive than lighter colours, and the price is as low as 30 cents for light colours to more than a dollar for the darker tints.

The charge for refining is $1 or less for silk and woollen stuffs, and for coarse materials, only about 10 cents.

The principal customers of the dyeing and bleaching works are the cotton and silk weaving mills, whose pro-

ducts they bleach, dye, and in some cases print. The four weaving mills, Ta Feng, Chiu Hua, Chen Hua and Ta Tung, bleach and dye their own products, and their annual output is worth about $600,000, sold chiefly in neighboring *hsien.*

The cotton-yarn used in the weaving mills is bought from Shanghai, while supplies of bleaching powder, dyes, and other chemicals are obtained locally. Accounts of the dyeing-works with their customers, the cotton piece-goods dealers, are settled at the end of every month, or at the three festivals, but cash is often demanded when a customer has had no previous business relations with the works. There are many middlemen between the cotton piecegoods producers and consumers. The output from cotton-mills, dyeing and pointing works generally goes first to the wholesale dealers, who buy from the producers with cash or settle accounts twice a month or three times a year, according to arrangement. From the wholesale dealers retail dealers obtain their supplies, and from these retailers in turn piecegoods shops and cloth vendors in the interior get their stock.

CHAPTER V

KNITTED GOODS INDUSTRY

THE KNITTING industry in Chekiang Province was started about the same time as the establishment of the Republic (1912), experienced its most prosperous days in 1926, and has been steadily declining since 1927. Hangchow, Haining, Chiahsing, Pinghu, and Ninghsien are the districts where the knitting industry is mainly centered, but most of the mills are merely old-style workshops equipped with hand worked gear. In Hangchow, only the Lu I (六一) and Tsui Lung (萃隆) mills have power plant. At Pinghu the mills equipped with power machinery are the Kuang Hua (光華), established in 1912, and Jih Hsin Chang (日新昌), established in 1920. At Ninghsien the Mei Chiu Feng Chi (美球豐記), established in 1915, is the largest knitting factory, and is equipped with several power looms, but all other mills in the Province are equipped with hand-machines.

LEADING FACTORIES.

It is impossible to ascertain the exact number of factories producing knitted goods in the Province, as this industry is mainly pursued by the female members of farmers' families, who in this way earn additional income. The following table, therefore, shows only the leading factories:—

	Location	Organization	Capital	Workers
Lu I ..... (六一織造廠)	Hangchow	Partnership	$20,000	162
Tsui Lung ..... (萃隆)	〃	〃	10,000	40
Chen Hsing ..... (振興)	〃	〃	6,000	20
I Cheng ..... (義成)	〃	〃	1,200	10
Sun Hsiang Ho .. (孫祥和)	〃	Sole ownership	1,000	10

	Location	Organization	Capital	Workers
Wang Heng Tai .. (汪恒泰)	,,	Sole ownership	$3,000	13
Hua Tung ..... (華 通)	,,	,,	3,000	15
Tang Kung Hsing (湯恭興)	,,	,,	2,500	4
Teh Hsing Hsiang (德興祥)	,,	Partnership	2,500	13
Heng Hsin ..... (恒 新)	,,	,,	2,000	7
Heng I Hsing .... (恒義興)	,,	Sole ownership	2,000	7
Hsieh Hua ..... (協 華)	,,	,,	2,000	10
Heng Tai ..... (恒 泰)	,,	Partnership	1,600	5
Chia Ting ..... (家 庭)	,,	,,	1,500	9
Ho Hsing ..... (合 興)	,,	,,	1,200	10
Ta Hsing ..... (大 興)	,,	Sole ownership	600	5
Li Kang ..... (利 康)	,,	,,	500	4
Hsin Tung ..... (信 通)	Haining	Partnership	7,000	60
Li Hua ..... (麗 華)	,,	,,	3,000	60
Ming Hsing ..... (明 星)	,,	,,	8,000	60
I Min ..... (益 民)	,,	,,	3,000	60
Ta Hua ..... (大 華)	,,	,,	2,500	60
Chen Chang Hsiang (振紹祥)	,,	,,	6,000	60
Lao Chen Chang .. (老振紹)	,,	Sole ownership	7,000	60
Hsieh Chang Shun (協昌順)	,,	Partnership	2,000	40
Cheng Tai Hsin .. (增泰新)	,,	,,	2,000	40
Tai Lung ..... (泰 隆)	,,	,,	1,000	40
Wang Mao Chang (王茂昌)	,,	Sole ownership	2,000	40

	Location	Organization	Capital	Workers
Fu Li ..... (福 利)	„	Partnership	$2,000	40
Chen Chang Hsing (振鋃興)	„	„	5,000	40
San Lien ..... (三 連)	„	„	2,000	40
Hung Yü ..... (鴻 裕)	„	„	2,000	40
Mei Chin ..... (美 琴)	„	Sole ownership	500	15
Cheng Mao ..... (增 茂)	„	„	600	15
Fu Shun Chang .. (富順昌)	„	Partnership	2,500	60
Wan Hsin Heng . (萬新恒)	„	„	2,000	60
Chin Chang Tai .. (晉昌泰)	„	Sole ownership	8,000	60
Jih Hsin Sheng .. (日新盛)	„	Partnership	3,000	60
Hsing Yeh ..... (興 業)	„	„	2,000	60
Ta Lun ..... (大 綸)	„	„	1,400	40
Chiu Ju ..... (九 如)	„	„	1,000	40
Chung Hsing .... (中 興)	„	„	1,000	40
Chen Tai ..... (振 泰)	„	„	550	40
Lao Hsieh Chang. (老協昌)	„	„	2,000	40
Shun Hsing ..... (順 興)	„	Sole ownership	500	15
Ta Lung ..... (大 隆)	„	Partnership	700	15
Kung Tai ..... (公 泰)	„	Sole ownership	500	15
Hsiang Lun ..... (祥 綸)	„	Partnership	600	15
Hsieh Chang Hsing (協昌興)	„	Sole ownership	2,000	60
Hsing Ta ..... (鑫 大)	Chiahsing	Partnership	1,000	6
Yu Sheng ..... (裕 生)	„	„	2,500	8

	Location	Organization	Capital	Workers
Heng Hsing ..... (恒興)	"	Partnership	$5,000	22
Chun Ho ..... (春和)	"	"	3,000	7
Ssu Ta ..... (四達)	"	"	1,000	4
Yung Ta ..... (永大)	"	"	2,000	9
Yao Hua ..... (耀華)	"	"	1,000	2
Yu Ta ..... (裕大)	"	Sole ownership	8,000	1
Hui Ho ..... (滙和)	Chiashan	"	4,000	240
Yeh Chin ..... (業勤)	"	"	2,500	150
Kuang Hua ..... (光華)	P'inghu	"	20,000	110
Jih Hsin Chang .. (日新昌)	"	"	8,000	70
I Hsin ..... (一新)	"	"	8000	55
Lun Hsin ..... (綸新)	"	"	2,000	106
Ming Hua ..... (明華)	"	"	5,000	33
Yu Hua ..... (裕華)	"	"	300	23
Yeh Tsui Chi .... (業萃記)	"	"	500	33
Jung Chi ..... (榮記)	"	"	1,500	46
Yung Hua ..... (永華)	"	"	500	22
Chin Yu ..... (勤餘)	"	"	1,000	24
Cheng Kang ..... (成康)	"	"	500	13
Hua Shang ..... (華商)	"	"	300	13
Min Sheng No. 1 (民生第一廠)	"	"	500	26
Hua Chang ..... (華紹)	"	"	300	38
Wan Feng Chang (萬豐昌)	"	"	1,000	65

	Location	Organization	Capital	Workers
Hsieh Ho Yung .. (恰和永)	„	Sole ownership	$1,000	33
Li Sheng ..... (立 盛)	„	„	300	13
Chen Feng ..... (震 豐)	„	„	1,000	26
Chen Ta ..... (振 大)	„	„	1,000	22
Chiu Ho ..... (久 和)	„	„	1,000	48
Min Chiang ..... (民 强)	„	„	400	20
Tung I ..... (同 益)	„	„	500	11
Tung Yuan ..... (同 源)	„	„	1,000	48
Yu Cheng ..... (裕 成)	„	„	300	16
Cheng Lung ..... (成 隆)	„	„	1,000	43
Shun Feng ..... (順 豐)	„	„	1,000	33
An Yu ..... (安 餘)	„	„	2,000	60
Ting Cheng ..... (鼎 成)	„	„	2,000	45
I Cheng ..... (義 成)	„	„	500	20
Ta Ming ..... (大 銘)	„	„	500	21
Mei Chiu Feng Chi (美球豐記針織廠)	Ninghsien	„	4,000	192
Chen Hsin ..... (振新機織廠)	„	„	3,000	32
Mei Hsing ..... (美星針織廠)	„	Partnership	4,000	32
Yung Hua ..... (榮華織廠)	„	„	1,600	30
Ming Hsing ..... (明星機織廠)	„	Sole ownership	300	15
Huai Yang ..... (淮陽針織廠)	„	„	3,000	100
Mei Ta ..... (美達針織廠)	„	„	1,500	20
San Min ..... (三民針織廠)	„	„	3,000	37

	Location	Organization	Capital	Workers
Tien Lun ..... (天綸鐵廠廠)	〃	Partnership	$3,000	60
Ssu Ta ..... (四達鐵廠廠)	Shaohsing	〃	15,000	220
Fu Yuan Hsing ... (福元興廠廠)	〃	〃	4,000	120
Tien Sheng Yung. (天生永)	〃	〃	3,000	80
Hsiang Feng Yu .. (祥豐裕)	〃	〃	3,000	35
Tsui Feng ..... (萃豐廠廠)	〃	Sole ownership	1,500	10
Ta Sheng ..... (大盛廠)	Huangyen	Partnership	3,000	5
Pao Tai Ho ..... (寶泰和)	Tientai	〃	1,000	19
Yeh Yu ..... (業 餘)	Chinhua	Sole ownership	500	3
Mei Ho ..... (美 和)	〃	〃	400	3
Min Sheng Chia Ting ..... (民生家庭針廠社)	〃	〃	500	1
Fu Hsin ..... (福 新)	Lanchi	——	400	—
Fu Lung ..... (福 隆)	〃	——	1,000	—
Ta Hua ..... (大 華)	〃	——	1,000	—
Teh Chang Tai .. (德昌泰)	〃	——	2,000	—
Hua Mei ..... (華 美)	〃	——	1,000	—
Kung Ta Chen ... (公大震)	〃	——	600	—
Li Ta ..... (立 大)	〃	——	1,000	—
Yu Hsing Hsiang . (裕興祥)	〃	——	1,200	—
Lung Hua ..... (隆 華)	〃	——	500	—
Hsin Fa Hsiang .. (新發祥)	〃	——	800	—
Tien Fu Hsiang .. (天福祥)	〃	——	1,500	—

	Location	Organization	Capital	Workers
Wan Tung ..... (萬 通)	Tungyang	Sole ownership	$1,000	12
Hsieh Chi ..... (協 記)	〃	——	300	3
Yu Cheng ..... (裕 成)	〃	——	500	3
Hui Feng ..... (惠 豐)	〃	——	200	2
Kung Ta ..... (公 大)	〃	——	1,000	16
Wei Cheng ..... (緯成襪廠)	Iwu	Sole ownership	500	5
Wu Jung Chi .... (吳容記)	〃	〃	600	2
Li Hua ..... (利華襪廠)	Yungkang	——	9,000	34
Hui Chun ..... (惠羣襪廠)	〃	——	2,000	22
Chen Mou Chang . (陳茂昌)	〃	——	500	5
Chou Chun Chi ... (周椿記)	〃	——	300	4
I Hsing Ho ..... (益興和)	〃	——	100	2
Fu Heng Feng .. (傅恆豐)	〃	——	100	2
Kung Chin Ta ... (孔錦大)	〃	——	100	2
Chen Hsien Wei .. (陳賢維)	〃	——	100	2
Chin Kung ..... (勁 工)	Chuhsien	Sole ownership	8,000	40
Li Ho ..... (履 和)	Yungchia	Partnership	4,600	50
Wu Teh Hua Jen Chi ..... (吳德華仁記)	〃	Sole ownership	1,000	30
Wu Teh Hua I Chi (吳德華義記)	〃	〃	700	2
Huang Hsin Sheng (黃新盛)	〃	〃	200	2
Wu Yu Chi ..... (吳玉記)	〃	〃	500	13
I Shun Sheng .... (益順生)	〃	〃	1,500	20

	Location	Organization	Capital	Workers
Hu Teh Sheng ... (胡德盛)	Yungchia	Sole ownership	$200	10
Lin Chu Sheng .. (林聚盛)	"	"	200	8
Ching Hsin Chin (精新勤)	"	"	500	14
Ching Hsin ..... (精 新)	"	"	500	30
Hu Ta Cheng .... (胡大成)	"	"	200	10
Mei Mei Ho ..... (美美和)	"	"	300	10
So Hsing Shun .. (蘇興順)	"	"	200	10
Chen Yu Chi ..... (陳玉記)	"	"	200	10
Yu Chun Sheng... (裕春生)	"	"	500	12
Ching Ho Ching Chi. (精和經記)	"	"	200	10
Hsieh Sheng Hsing (協生興)	"	"	1,000	10
Chi Yuan ..... (濟 遠)	"	"	500	12
Chu Yuan Fa .... (朱源發)	"	"	800	15
Tung I ..... (統 益)	"	Partnership	3,000	60
Hu Hsing Shun .. (鍾 仙)	"	Sole ownership	2,000	40
Huang Yuan Li .. (黃源利)	"	"	5,000	40
Chu Cheng ..... (組 成)	"	"	10,000	60
Hua Lun ..... (華 綸)	"	"	500	30
Hsin Hsing ..... (新 興)	"	Partnership	1,500	30
Hsiang Kang .... (香 港)	"	Sole ownership	1,000	26
Hua Cheng ..... (華 成)	"	Partnership	3,000	30
Wan Hsing ..... (萬 興)	"	Sole ownership	1,000	30
Huang Yuan Shun (黃源順)	"	"	500	10

	Location	Organization	Capital	Workers
Hsu Chin Chang .. (徐錦章)	Yungchia	Sole ownership	$300	4
Chen Hua ..... (增 華)	„	„	500	10
Wang Yuan Feng (王源豐)	„	„	500	25
Li Pao Chi ..... (李寶記)	„	„	500	7
Teh Jun Feng ... (德潤豐)	„	„	500	7
Chung Mei Ho ... (總美和)	„	„	500	12
Wang Shun Chi . (王順記)	„	„	200	6
Chi Cheng ..... (機 成)	„	„	1,000	150
Chang Kuang Hsing (張廣鑫)	„	„	500	50
Sheng Hua ..... (勝 華)	„	„	500	15

Of the 174 knitting-mills listed above, the total registered capital amounts to $377,750, but as these figures are taken from the records of the Business Tax Collectorate, and a large number of so-called "factories" do not come within the scope of this investigation, the actual amount must be much greater. The following table shows the distribution of the 174 mills in the various *hsien*:

	Mills	Capital	Workers
Hangchow	17	$ 60,600	344
Haining	32	83,350	1,390
Chiahsing	8	23,500	59
Chiashan	2	6,500	390
P'inghu	30	62,900	1,135
Ninghsien	9	23,400	518
Shaohsing	5	26,500	465
Huangyen	1	3,000	5
Tientai	1	1,000	19
Chinhua	3	1,400	7
Lanchi	11	11,000	—
Tungyang	5	3,000	36
Iwu	2	1,100	7
Yungkang	8	12,200	73

	Mills	Capital	Workers
Chuhsien	1	8,000	40
Yungchia	39	46,300	920
Total.....	174	$373,750	5,408

In addition to the above, there are a number of mills in Pukiang and Pingyang. The six mills in the latter place produce 50,000 pairs of socks a year, valued at $10,000.

CAPITAL AND WORKERS

As already stated, the capital invested in knitting-mills in Chekiang is very limited. Only one establishment is capitalized at $20,000, the Lu I factory, Hangchow, the others all having capital under $10,000, and some even as little as $100. Details of distribution are as follows:—

Capital	Hangchow	Haining	Chiahsing	Chiashan	Pinghu	Ningbsien	Shaohsing	Hunguyen	Tientai	Chinhua	Lanchi	Tungyung	Iwu	Yunkang	Chuhsien	Yungchia	Total
$100	—	—	—	—	—	—	—	—	—	—	—	—	—	4	—	—	4
$101-$500	1	3	—	—	13	1	—	—	—	3	2	3	1	2	—	24	53
$501-$1,000	1	7	3	—	9	—	—	—	1	—	6	2	1	—	—	7	37
$1,001-$5,000	12	17	4	2	5	8	4	1	—	—	3	—	—	1	—	7	64
$5,001-$10,000	2	5	1	—	2	—	—	—	—	—	—	—	—	1	1	1	13
$10,001-$20,000	1	—	—	—	1	—	1	—	—	—	—	—	—	—	—	—	3

The business organization of 23 mills is unknown, but 98 out of the other 151 mills, or 64 per cent, are under sole ownership, while 53 or 35 per cent are operated as partnerships.

The total number of workers employed in the industry is estimated at 5,400, which figure is far from exact because a large number of persons work in their own homes, getting their supply of yarn from nearby mills. Regular workers in the factories are paid from $5 to $40 per month for male operatives, and $5 to $18 for females. The piece-work rate for socks in from 20 to 40 cents per dozen.

RAW MATERIALS

The chief materials used by the knitting-mills in Chekiang are cotton yarn, cotton thread, silk, and wool, the annual consumption being as follows:—

	Cotton Yarn (400 lb. Bales)	Cotton Thread (400 lb. Bales)	Wool Yarn (100 lb. Bales)	Silk (Ounces)
Hangchow	2,950	530	300	650
Haining	3,200	640	448	—
Chiahsing	700	163	—	—
Chiashan	300	30	15	—
P'inghu	3,000	450	50	—
Ninghsien	540	70	120	15,000
Shaohsing	460	130	100	—
Huangyen	20	—	—	—
Tientai	10	—	—	—
Chinhua	380	—	—	—
Lanchi	110	—	—	—
Tungyang	350	—	—	—
Iwu	20	—	—	—
Yungkang	150	30	—	—
Chuhsien	30	5	—	50
Yungchia	2,900	—	—	—
Total	15,120	2,093	1,033	15,650

All the above materials are purchased from Shanghai and Wusih (無 錫), Kiangsu Province. Yarns from eight to 60 counts are mostly used, and for those under 20 counts the "Man and Bell" brand, produced by Chinese cotton-mills, are prefered, while for yarns of over 20 counts Japanese products are most widely used.

RANGE OF PRODUCTION

The principal product of the knitting-mills in Chekiang is hosiery, with singlets, drawers, and cotton underwear secondary products. The following table shows the output of the various mills:—

		Description	Dozen
Lu I	(六一機造廠)	Hosiery	12,000
		Singlets & Underwear	9,000
Jui Lung	(瑞 隆)	Hosiery	28,000
Chen Hsing	(振 興)	"	20,000

		Description	Dozen
I Cheng	(義 成)	Hosiery	3,000
Sun Hsiang Ho	(孫祥和)	"	2,400
Wang Heng Tai	(汪恆泰)	"	3,700
Hua Tung	(華 通)	"	4,300
Tang Kung Hsing	(湯恭興)	"	8,600
Teh Hsing Hsiang	(德興祥)	"	3,600
Heng Hsin	(恆 新)	"	6,200
Heng I Hsing	(恆義興)	"	6,500
Hsieh Tai	(協 華)	"	5,000
Heng Tai	(恆 泰)	"	6,500
Chia Ting	(家 庭)	"	620
Ho Hsing	(合 興)	"	4,200
Ta Hsing	(大 興)	"	1,800
Li Kang	(利 康)	"	1,400
Hsin Tung	(信 通)	"	50,000
Li Hua	(麗 華)	Hosiery, Scarves & Singlets	35,000
Ming Hsing	(明 星)	Hosiery, Russian Caps and Scarves	48,000
I Min	(益 民)	Hosiery	50,000
Ta Hua	(大 華)	"	45,000
Chen Chang Hsiang	(振昌祥)	"	50,000
Lao Chen Chang	(老振绸)	"	50,000
Hsieh Chang Shun	(協昌順)	"	17,000
Chen Tai Hsin	(增泰新)	"	17,000
Tai Lung	(泰 隆)	"	8,500
Wang Mao Chang	(王茂昌)	"	22,000
Fu Li	(福 利)	"	17,000
Chen Chang Hsing	(振绸興)	"	25,000
San Lien	(三 連)	"	15,000
Hung Yu	(鴻 裕)	"	17,000
Mei Chiu	(美 球)	"	3,000
Cheng Mao	(增 茂)	"	5,000
Fu Shun Chang	(富順昌)	"	36,000
Wan Hsin Heng	(永新恆)	"	35,000
Chin Chang Tai	(晉昌泰)	Hosiery, Scarves & Singlets	65,000
Jih Hsin Chang	(日新盛)	Hosiery	35,000
Hsing Yeh	(興 業)	"	36,000
Ta Lun	(大 綸)	"	17,000
Chiu Ju	(九 如)	"	17,000
Chung Hsing	(中 興)	"	4,000
Chen Tai	(振 泰)	"	4,000
Lao Hsieh Chang	(老協昌)	"	17,000
Shun Hsing	(順 興)	"	3,000
Ta Lung	(大 隆)	"	4,000
Kung Tai	(公 泰)	"	4,000

		Description	Dozen
Hsiang Lun	(祥 綸)	Hosiery	5,000
Hsieh Chang Hsing	(協昌興)	"	17,000
Hsing Ta	(鑫 大)	"	10,000
Yu Sheng	(裕 生)	"	10,000
Heng Hsing	(恆 興)	"	30,000
Chun Ho	(春 和)	"	20,000
Ssu Ta	(四 達)	"	5,000
Yung Ta	(永 大)	"	10,000
Yao Hua	(耀 華)	"	5,000
Yu Ta	(裕 大)	"	5,000
Hui Ho	(滙 和)	"	40,000
Yeh Chin	(業 勤)	"	26,000
Kuang Hua	(光 華)	Hosiery and Caps	50,000
Jih Hsin Chang	(日新昌)	"	24,000
I Hsin	(一 新)	Hosiery	36,000
Lun Hsin	(綸 新)	"	61,000
Ming Hua	(明 華)	"	11,200
Yu Hua	(裕 華)	"	4,000
Yeh Tsui Chi	(葉粹記)	"	6,000
Jung Chi	(榮 記)	"	20,000
Yung Hua	(永 華)	"	4,000
Chin Yu	(勤 餘)	"	5,000
Cheng Kang	(成 康)	"	2,600
Hua Shang	(華 商)	"	5,000
Min Sheng No. 1	(民生第一廠)	"	3,200
Hua Chang	(華 錩)	"	2,800
Wan Feng Chang	(萬豐昌)	"	7,200
I Ho Yung	(怡和永)	"	—
Li Sheng	(立 盛)	"	4,000
Chen Feng	(震 豐)	"	8,000
Chen Ta	(振 大)	"	11,000
Chiu Ho	(久 和)	"	11,000
Min Chang	(民 强)	"	4,800
Tung I	(同 益)	"	8,400
Tung Yuan	(同 源)	"	9,400
Yu Cheng	(裕 成)	"	2,800
Cheng Lung	(成 隆)	"	8,100
Shun Feng	(順 豐)	"	10,100
An Yu	(安 餘)	"	7,200
Ting Cheng	(鼎 成)	"	7,000
I Cheng	(義 成)	"	5,500
Ta Ming	(大 銘)	"	4,700
Mei Chiu Feng Chi	(美球豐記針織廠)	Hosiery, Singlets, Russian Caps, Sweaters, Scarves and Underwear	50,000

		Description	Dozen
Chen Hsin	(振新襪廠)	Hosiery	8,000
Mei Hsing	(美星針織廠)	"	5,500
Jung Hua	(榮華襪廠)	"	9,000
Ming Hsing	(明星織襪廠)	"	7,500
Huai Yang	(淮陽針織廠)	Hosiery, Russian Caps, and Sweaters	9,000
Mei Ta	(美達針織廠)	"	5,000
San Min	(三民針織廠)	Hosiery, Sweaters, Gloves, Scarves towels & caps	16,000
Tien Lun	(天綸絲襪廠)	Hosiery	3,000
Ssu Ta	(四達織襪廠)	"	33,600
Fu Yuan Hsing	(福元興襪廠)	"	50,000
Tien Sheng Yung	(天生永)	"	20,000
Hsiang Feng Yu	(祥豐裕)	Hosiery, Underwear & Caps	7,100
Tsui Feng	(萃豐襪廠)	Hosiery	900
Ta Sheng	(大盛廠)	"	25,000
Pao Tai Ho	(寶泰和)	"	36,000
Yeh Yu	(業 餘)	"	1,500
Mei Ho	(美 和)	"	3,500
Min Sheng	(民生家庭針織社)	"	2,400
Fu Hsin	(福 新)	"	540
Fu Lung	(福 隆)	"	10,000
Ta Hua	(大 華)	"	2,700
Teh Chang Tai	(德昌泰)	"	2,500
Hua Mei	(華 美)	"	1,080
Kung Ta Chen	(公大震)	"	540
Li Ta	(立 大)	"	2,500
Yu Hsing Hsiang	(裕興祥)	"	4,320
Lung Hua	(隆 華)	"	4,320
Hsin Fa Hsiang	(新發祥)	"	4,320
Tien Fu Hsiang	(天福祥)	"	540
Wan Tung	(萬 通)	"	2,500
Hsieh Chi	(協 記)	"	300
Yu Sheng	(裕 盛)	"	700
Hui Feng	(惠 豐)	"	36
Kung Ta	(公 大)	"	2,600
Wei Cheng	(緯成襪彩)	"	100
Wu Jung Chi	(吳容記)	"	190
Li Hua	(利華襪廠)	"	10,000
Hui Chun	(惠春襪廠)	"	4,000
Hsu Mao Chang	(徐茂昌)	"	5,000
Chou Chun Chi	(周椿記)	"	500
I Hsing Ho	(益興和)	"	200
Fu Heng Feng	(傅恆豐)	"	200

		Description	Dozen
Kung Chin Ta	(孔錦大)	Hosiery 9 Caps	200
Chen Hsien Wei	(陳賢維)	„	200
Chin Kung	(勤 工)	Hosiery and Towels	30,000
Li Ho	(履 和)	Hosiery, Caps & Singlets	12,000
Wu Teh Hua Jen Chi	(吳德華仁記)	„ „ „	8,000
Wu Teh Hua I Chi	(吳德華義記)	„ „ „	1,600
Huang Hsin Sheng	(黃新盛)	„ „ „	1,600
Wu Yu Chi	(吳玉記)	„ „ „	3,850
I Shun Sheng	(益順勝)	„ „ „	4,500
Hu Teh Sheng	(胡德盛)	„ „ „	1,000
Ling Teh Sheng	(林德盛)	„ „ „	1,600
Ching Hsin Chin	(精新勤)	„ „ „	3,250
Ching Hsin	(精 新)	„ „ „	3,250
Hu Ta Cheng	(胡大成)	„ „ „	1,000
Mei Mei Ho	(美美和)	„ „ „	1,350
Su Hsing Shun	(蘇興順)	„ „ „	5,000
Chen Yu Chi	(陳玉記)	„ „ „	4,000
Yu Chun Sheng	(裕春生)	„ „ „	3,250
Ching Ho Ching Chi	(精和經記)	„ „ „	1,750
Hsieh Sheng Hsing	(協生興)	„ „ „	2,750
Chi Yuan	(濟 遠)	„ „ „	1,700
Chu Yuan Fa	(朱源發)	„ „ „	2,000
Tung I	(統 益)	„ „ „	10,500
Ho Hsien	(鶴 仙)	„ „ „	8,500
Huang Yuan Li	(黃源利)	„ „ „	1,450
Chu Cheng	(紐 成)	„ „ „	1,750
Hua Lun	(華 綸)	„ „ „	3,000
Hsin Hsing	(新 興)	„ „ „	6,000
Hsiang Kang	(香 港)	„ „ „	3,500
Hua Cheng	(華 成)	„ „ „	6,000
Wan Hsing	(萬 興)	„ „ „	6,000
Huang Yuan Shun	(黃源順)	„ „ „	750
Hsu Chin Chang	(徐錦章)	„ „ „	1,350
Cheng Hua	(增 華)	„ „ „	3,000
Wang Yuan Feng	(王源豐)	Hosiery	4,000
Li Pao Chi	(李寶記)	„	800
Teh Jun Feng	(德潤豐)	„	4,000
Mei Mei Ho	(美美和)	„	3,500
Wang Shun Chi	(王順記)	„	500
Chih Cheng	(織 成)	„	15,000
Chang Kuang Hsing	(張廣興)	„	4,500
Sheng Hua	(勝 華)	„	3,000
		TOTAL	1,938,956

MARKETS

Most of the knitted goods produced in Chekiang are marketed within the Province, though a small quantity is shipped elsewhere. Shanghai and districts along the Nanking-Shanghai Railway are among the more important markets outside the Province. The products of Chiahsing are shipped to Shantung, Honan and the Straits Settlements, those of Chuhsien to Yushan (玉山), Hokou (河口), and Kuanghsin (廣 信), Kiangsi Province, and those of Yungchia to Fukien Province.

CHAPTER VI

LACE INDUSTRY

THE manufacture of lace in Chekiang Province was started at Ninghsien some decades ago, when peasant girls learned the art from the Jesuit sisters of Jen Tsu T'ang (仁慈堂), a Catholic church located at Yao Hang Chieh (藥行街). Increasing demand led to rapid development of the industry, which was not only pursued by 1,000 girls employed by the Church, but also by female members of peasant families in nearby villages. Recently, however, the industry has suffered a setback, and Jen Tsu T'ang is the only place where lace-making is now still carried on. At Yungchia the industry was started in 1923, when the Chi Wen (綺紋) factory was established, and by 1927 about 18 mills were operating, but the number has steadily decreased since 1928, until now only six factories are in operation. At Hsiaoshan the industry was also started in 1923, and 1930 was the boom period for the lace industry, as there were then 30 factories operating in the city, and over 20,000 workers were employed. Recent investigation reveals that the number of mills in the city is now only six. Four small establishments are established at Lots'ing, but their capital is small, ranging from $500 to $2,000. The following table shows particulars of the lace factories in the Province:—

	Location	Organization	Established	Capital
Ching Mei (榕美)	Yungchia	Sole ownership	1925	$ 500
Chi Wen (綺紋)	〃	〃 〃	1923	500
Ch'ang Chi (昌記)	〃	〃 〃	1928	500
Mei Ta (美達)	〃	〃 〃	1926	2,000
Chen Ou (振甌)	〃	Partnership	1927	500
Sheng Mei (勝美)	〃	Sole ownership	1928	500
Ch'ao Chi (超記)	Lots'ing	〃 〃	1926	1,000
Chi Mei (姊妹)	〃	〃 〃	1928	500
Mi Chi (密記)	〃	〃 〃	1927	500
Shen Chi (森記)	〃	〃 〃	1929	800

	Location	Organization		Established	Capital
T'ai Feng (泰豐)	Hsiaoshan	„	„	1928	1,300
Ying Yü (鷹餘)	„	„	„	1925	700
Mei Ta (美達)	„	„	„	1929	1,100
Teh Feng (德豐)	„	„	„	1928	1,000
Hsin Hua (新華)	„	„	„	1927	700
Chung Hua (中華)	„	„	„	1931	5,000

Most of the mills listed above have no regular workers, lace-making being done in the homes at piece-work rates. Wages are paid according to the number of yards made, the current rate being 22 cents per yard, as against 25 cents in 1931, 50 cents in 1929, and 80 cents in 1923.

SUPPLIES OF RAW MATERIAL

Linen and cotton thread are the principal materials used by lace-makers. White and ecru linen thread is imported from Great Britain, and cotton thread is imported from Germany or bought from the Heng Feng (恆豐), and Shen Hsin (申新) cotton mills at $15 per 10 lbs.

PRODUCTION.

As in Kiangsu, lace-making in Chekiang is done by two distinct groups of workers, the first doing the netting, and the second adding the decorative designs. Owing to lack of statistical data, the exact production of lace goods is not known, but the annual turnover of the 18 shops in Chekiang amounts to $500,000, detailed figures being as follows:—

Ching Mei	$ 86,000
Chih Wen	100,000
Ch'ang Chi	20,000
Mei Ta	40,000
Chen Ou	30,000
Shen Mei	20,000
Ch'ao Chi	4,500
Chi Mei	11,232
Mi Chi	4,000
Shen Chi	3,000
Tai Feng	40,000
Ying Yü	25,000
Mei Ta	35,000
Teh Feng	30,000
Hsin Hua	20,000
Chung Hua	42,000

MARKETS.

The United States is the largest buyer of lace goods made in Chekiang, which are first sent to Shanghai before being exported. Unlike the products of Lots'ing, the lace-goods made in Yungchia and Hsiaoshan are all for outside markets.

CHAPTER VII

RICE-MILLING

THE first modern rice-mills in Chekiang were the Tai Kang (泰康) and Tai Chi (泰記), established in Ninghsien in 1912. The following year saw a third mill in the province, the Shen Hu (申湖) in Wuhsing. Like many other new industries, these ventures met with difficulties at the start, as many people had a prejudice against machine-milled rice, which was regarded as unwholesome. Accordingly, very few had courage to invest in the industry, and during the eight years subsequent to 1913, only 23 new mills were established.

However, with the gradual removal of prejudice among the population, coupled with the introduction of petroleum and Diesel engines for motive power, rice-milling in Chekiang entered upon a more prosperous period after 1921. New mills were established in many rice-growing districts, especially Ninghsien and Yuyao, where the number of mills had increased to 40 by the end of 1926. More recently a number of power-plants in the province have started rice-milling as a side-line to their ordinary activities, among the best-known being the Yung An Power Plant (永安電氣公司), Hsiaoshan, Yuhang Power Plant (餘杭電廠), Yuhang, Kuang Ming Power Plant (光明電燈廠), Lanchi, and Yung Kang Power Plant (永康電燈公司), Yungkang.

The total number of mills in Chekiang is 450, of which about 45 use electric motors, Diesel engines being the most popular type of motive power. The rice-milling department of the Yuhang Power Plant is now operated by the National Reconstruction Commission. Of the private enterprises more than 200 are partnerships, 150 are each owned by one individual, while the number of corporations does not exceed 100. According to the nature of business done, rice-mills in Chekiang may be divided into seven groups: (1) those milling on behalf of rice-merchants,

such as Fou Feng (阜豐), Hsiaoshan; (2) those milling for rice-brokers (rice *hong*), such as Kung Ho (公和), Chenhsien; (3) those milling for themselves, such as Yu Lung (餘隆), Yüyao; (4) millers who are also brokers, such as Feng Yu Heng (豐裕恆), Hangchow; (5) millers who are also retailers, such as Yuan Sheng (元升), Tsuchi; (6) millers who also supply power, such as Cheng Ta (正大), Shangyu and Yung An (永安), Hsiaoshan; and (7) millers who also supply electric current for lightings such as Lo Hsi (樂戌), Lots'ing.

The mills operate only four or five months in a year, when rice is being harvested, so that the number of workers employed is very irregular. A recent estimate puts the total number dependent upon the industry at 2,268, distributed among 450 mills. No women or children are employed. The majority of the men are paid at piecework rates, and are engaged and discharged according to the amount of work available.

DETAILS OF RICE MILLS IN CHEKIANG

	No. of Mills	Total Capital	Average per Mills	MACHINERY: Power Engines	MACHINERY: Diesel Engines	MACHINERY: Milling Machines	No. of Workers	Annual output (Piculs)
Hangchow Municipality	163	$100,000	$ 613	103	5	140	592	1,000,000
Ninghsien	69	208,100	3,016	—	75	109	591	843,095
Yüyao	33	50,650	1,535	—	34	43	177	99,770
P'ingyang	28	50,000	1,786	—	—	—	300	——
Yungchia	27	——	—	—	—	—	—	——
Juian	20	30,500	1,525	—	—	—	63	——
Wuhsing	15	42,100	2,807	—	—	—	99	——
Ch'anghsing	14	60,400	4,314	1	10	21	44	——
Linghai	14	87,000	6,214	—	14	26	114	201,300
P'inghu	9	13,300	1,477	—	10	—	79	173,200
Lots'ing	7	32,400	4,629	—	7	—	—	——
Tsuch'i	8	10,800	1,350	—	9	9	29	31,500
Ch'enghsien	5	7,500	1,500	—	—	10	14	19,500
Fenghua	5	5,700	1,140	—	5	5	17	30,540
Yungk'ang	5	15,400	3,080	—	5	9	26	——
Hsinch'ang	4	13,000	3,250	—	4	8	30	5,500
Shaohsing	3	6,400	2,133	—	3	7	23	36,400
Chinhua	3	3,000	1,000	—	3	5	8	8,500

	No. of Mills	Total Capital	Average per Mills	MACHINERY Power Engines	Diesel Engines	Milling Machines	No. of Workers	Annual output (Piculs)
Yühang	3	92,500	30,833	1	2	4	11	18,800
Hanghsien	3	——	—	—	—	—	—	——
Shangyü	3	37,400	12,466	—	4	6	15	20,950
Hsiaoshan	2	101,500	50,750	2	2	6	18	59,000
Lanch'i	2	3,000	1,500	—	—	—	—	——
Shouch'ang	1	2,600	2,600	—	2	2	7	4,500
Chienteh	1	4,000	4,000	—	1	1	5	——
Sungyang	2	5,000	2,500	—	2	2	—	18,420
Fuyang	1	4,400	4,400	—	1	1	2	4,680
Hsinteng	1	3,000	3,000	—	1	1	4	43,200
Total	451	989,600	2,195	107	199	524	2,268	2,618,855

The rice milled in most districts is mainly local grain, but Hangchow is entirely dependent upon other districts for supplies, as it does not grow any rice. In addition to supplies from regions formerly under the jurisdiction of Chiahsing and Huchow prefectures and upper reaches of the Chientang River, a large quantity of rice is shipped from Kiangsu and Anhui provinces. From Ssuan (泗安), Kuangteh (廣德) and Ihsing (宜興) in the same provinces, there are also frequent shipments of rice to Wuhsing.

CHAPTER VIII

OIL-MILLING

THE production of vegetable oils is an old established industry in Chekiang Province, but mills equipped with modern machinery are very few. With the exception of the Tung Li Yuan Mill (通利源榨油廠), Ninghsien, the Wu Chang Yuan Mill (吳長源油廠), Yungchia, and the Teh Lung Mill (德隆油廠), Hangchow, practically all the establishments of this kind in the province are of the primitive type, operating on very small capital, and known as *yu che* (油車) or *yu fang* (油坊). These small mills are generally equipped with simple wooden presses, and operate at irregular intervals whenever raw material for pressing happens to be available.

Chekiang produces five varieties of oil—tung oil, tea oil, vegetable tallow, rapeseed oil, and cottonseed oil, the last-named being manufactured only in Ninghsien by the Tung Li Yuan, the largest mill in the province.

Most of the mills are established in districts where tung, tallow and tea oil trees are abundant, and in the southern and western parts of the province the number of mills is estimated at more than 1,000, distributed approximately as follows:—

Kiangshan	70	K'aihua	50
Chinhua	45	Ch'angshan	54
Sungyang	40	Iwu	25
Lungchuan	40	Lanch'i	80
Ch'ienteh	40	Ch'ühsien	80
Lungyu	70	T'unglu	30
Fenshui	40	Shunan	50
Yüch'ien	30	P'ukian	70
Fuyang	10	Ts'ingt'ien	20
Yunho	10	Chuchi	95
Ch'anghua	30	Shouch'ang	40
Shuian	30	Yungchia	20
Ninghsien	1		

The Tung Li Yuan Mill, established in 1907 at Ninghsien, is the only large mill in Chekiang. It has a working capital of $60,000, while the factory premises and equipment are valued at about $80,000. The plant consists of 46 presses driven by one steam and one Diesel engine, together generating 176 h.p. In the old-type mills the equipment consists only of a few wooden presses, grinding-mills, ovens, pans, sieves, etc., so that no large amount of capital is required to start business.

Wages are paid on a daily basis. The Tung Li Yuan Mill employs more than 100 operatives, 30 per cent of whom receive about 33 cents per day, and the remainder about 50 cents, with board and lodging, working in two shifts of eight hours. The Wu Chang Yuan Mill, Yung-chia, and the Teh Lung Mill, Hangchow do not work at night, the average daily wage being about 30 cents for a day of ten hours. In the small mills, workers usually put in from 10 to 12 hours a day, the average wage being a little over 20 cents, with board and lodging.

Oil mills close down when raw material is not available, so that their operating period covers only about six months in the year, as follows: November, tea oil; December to February, vegetable tallow and tung oil; and May to June, rapeseed oil.

RAW MATERIALS

Cotton-seed.—Supplies are abundant in such districts as Yüyao Ts'uch'i, Chenhai, Shaohsing and Shangyü, where the sandy soil is especially suited for the cultivation of cotton. It is from these districts that the Tung Li Yuan Mill obtains its supplies, the annual consumption amounting to 150,000 piculs, costing about $3 a picul.

Tung-seed.—Tung trees are found in many districts, usually on the slopes of a hill, along the roadsides, or on footpaths between fields, growing to an average height of 15 feet. The fruit contains from five to seven seeds, called *tung wu* (桐 烏), the white kernel being known as *tung pei* (桐 白). From every 100 catties of fruit about 50 catties of seed are obtained, which in turn yield about 30 catties of kernels, from which the oil is extracted, every 30 catties

yielding from 12 to 15 catties of oil. The market price of tung-seed varies from $4 to $5 a picul, while kernels cost from $8 to $9.

Tallow Tree Seed.—Tallow trees are sometimes of natural growth and sometimes specially cultivated, reaching a height of more than 10 feet, with leaves which assume a brilliant red colour in autumn. The fruit, which is about half an inch in diameter, bursts when fully ripe, disclosing the three seeds it contains. These seeds somewhat resemble coffee-beans in size and shape, and consist of an oily, albuminous kernel enclosed in a hard, black shell and thickly covered with the firm, white, fatty substance which constitutes the "vegetable tallow" of commerce.

Two varieties of oil are extracted from tallow tree seeds—vegetable tallow (桕油, *chiu-yu*) or "white oil" (白油, *pei yu*), and "green-oil" (青油, *ching-yu*) or *tsu yu* (梓油), the latter being obtained from the seeds after the tallow has been removed. From every 100 catties of seeds about 20 catties of tallow and 16 catties of "green-oil" are obtained. The annual consumption of seed by mills in the province amounts to approximately 230,000 piculs, valued at from $6 to $7 per picul.

Tea-seed—Chinese "tea oil" is not the product of the tea plant, but of *Camellia oleifera* or *Camellia sasanqua*, shrubs which grow wild or are cultivated on hillsides, require practically no attention, and attain a height of from 8 to 10 feet. The fruit is round, reddish-brown in colour, the smooth outer husk containing from three to four seeds, which are put on the market in two varieties, "large grain" (大板茶子, *ta-pan-cha-tse*) and "small grain" (小板茶子, *hsiao-pan-cha-tse*). The former has a comparatively thin kernel and is yellowish in colour, the oil extracted being likewise of a yellow tint. The "small grain" seeds are black, and yields an oil of the same colour. About 19 catties of oil can be extracted from every 100 catties of "large grain" seed, and about 23 catties from the "small grain."

The price of tea-seed in Chekiang ranges from $4 to $5 per picul, and the annual consumption by the mills is estimated at 76,000 piculs.

MANUFACTURING PROCESSES

Tung Oil—Tung seeds are first removed from the outer skin, dried in the sun, and crushed by stone-rollers or edge-runners, after which the pulverised nuts are heated in iron pans and then steamed. While still hot the mass is placed in a press, operated by a series of wedges hammered with a battering ram. The oil which exudes is strained through a coarse cloth.

Tung oil produced in Chekiang is of three varieties: *tou-yu* (頭 油) or "oil of first extraction"; *er-yu* (二 油) or "oil of second extraction"; and *san-yu* (三 油) or "oil of third extraction." *Tou-yu* is, of course, the best, being extracted direct from the seeds, and is distinguished from the other varieties by its light yellowish colour. *Er-yu* is obtained from the residue after the first pressing, and *san-yu*, from that of the second pressing, the processes being much the same as those employed in extracting *tou-yu*. *Er-yu* and *san-yu* are dark brown in colour.

Vegetable Tallow—The ripe fruit is first bruised and sifted in order to separate the outer shells, after which the cleaned seeds, with their fatty covering, are put into a wooden cylinder with a perforated bottom, which is suspended over an iron vessel containing boiling water. The seeds are thus steamed until the fat is quite soft. and then gently beaten in a mortar to loosen the tallow, the whole being then transferred to heated bamboo sieves, through which the melted tallow runs off and allowed to cool into a solid mass. The crude tallow thus obtained is very coarse and dark in colour, and to remove impurities is again melted and poured into cylinders formed of several straw rings bound with bamboo hoops. These cylinders are placed in a crude press, by which the liquid tallow is forced out and collected in a tub below, and allowed to solidify. Sometimes tallow is further refined by being remelted a second time.

The seeds remaining after the tallow has been removed are ground between heated millstones; the mass winnowed to remove the shells, after which it is passed

through an edge-runner mill, steamed, made into cakes, and hot-pressed, the oil thus obtained being known as "green oil" (*ching-yu*).

Tea-oil—is extracted from the fruit of *Camellia Oleifera*. After the skin has been removed the kernels are crushed to a coarse powder by stone rollers, steamed, and then submitted to pressure. The oil obtained is of a yellowish tint and thin, with a slightly fragrant odour and a mild non-irritating flavour.

Rapeseed Oil—The seed is first dried in the sun, then half-baked over a fire, crushed to fine powder, and placed in a press. The oil obtained is pale yellow or greenish-yellow in colour.

Cotton-Seed Oil—The seeds are first decorticated or hulled, and the kernels ground or pressed. Heat is applied to the ground kernels, and the crude oil thus obtained, which is frequently dark reddish-brown in colour, is clarified by the addition of lime. The mixture is then steamed, causing impurities and colouring matter to settle to the bottom.

INDUSTRIAL USES OF OILS

Cotton-seed oil, rape-seed oil and tea oil are largely used for culinary purposes. Cotton-seed oil is also employed in making soap, while tea oil is used as a dressing for the hair and is sometimes applied to iron utensils to prevent rust. Vegetable tallow is used for making candles or soap as a substitute for beef tallow and coconut oil. Tung oil, however, is used for a very wide range of purposes—as a ground for boat and house painting, and for coating umbrellas and rain-coat cloth on account of its waterproof qualities. When mixed with gypsum into a kind of gum, it makes good fuel, and is also used in making printing-ink, imitation lacquer, and paint.

PRODUCTION AND MARKETING

The production in Chekiang of various varieties of vegetable oils and their respective prices in 1932 were as follows:—

	Tung Oil		Vegetable Tallow		Tea Oil		Rapeseed Oil		Cottonseed	
	Output Piculs	Value Dollars	Output Piculs	Value Dollars	Output Picul	Value Dollars	Output Piculs	Value Dollars	Output Piculs	Value Dollars
Kiangshan	20,655	265,790	4,740	80,460	1,240	24,800	805	16,100	—	—
Ch'angshan	10,000	160,000	4,100	6,400	1,000	22,000	440	7,040	—	—
Ch'ühsien	10,000	170,000	—	—	1,000	22,000	—	—	—	—
K'aihua	5,000	70,000	1,300	21,100	1,000	24,000	2,000	86,000	—	—
Lungch'uan	3,000	60,000	—	—	—	—	—	—	—	—
Sungyang	3,000	65,000	—	—	—	—	—	—	—	—
Lanch'i	30,000	600,000	3,000	—	—	—	—	—	—	—
Lungyu	—	—	7,200	106,000	—	—	2,880	57,600	—	—
Chinhua	8,000	160,000	30,000	460,000	1,300	30,000	—	—	—	—
Iwu	4,000	84,000	—	—	—	—	—	—	—	—
Chienteh	6,600	132,000	1,933	38,680	1,000	23,000	2,280	45,600	—	—
T'unglu	5,000	100,000	—	—	—	—	—	—	—	—
Fenshui	6,000	126,000	—	—	—	—	—	—	—	—
Shunan	20,000	440,000	10,000	180,000	1,000	23,000	—	—	—	—
Shouch'ang	3,000	54,000	13,000	266,000	900	20,700	800	16,000	—	—
Shuian	2,300	41,000	4,960	108,000	900	20,700	770	18,000	—	—
Yüch'ien	2,000	40,000	—	—	—	—	—	—	—	—
Ch'anghua	2,000	40,000	—	—	—	—	—	—	—	—
P'ukiang	13,000	260,000	5,000	100,000	—	—	—	—	—	—
Chuchi	—	—	11,550	219,450	300	6,900	—	—	—	—
Fuyang	—	—	1,000	22,000	—	—	—	—	—	—
Hanghsien	—	—	—	—	—	—	7,900	158,000	—	—
Yunho	—	—	—	—	100	1,500	—	—	—	—
Ts'ingt'ien	150	3,000	150	2,700	400	8,000	—	—	—	—
Linhai	—	—	14,000	252,000	—	—	—	—	—	—
Yungchia	300	10,000	1,500	31,000	700	17,000	—	—	—	—
Ningpo	—	—	—	—	—	—	—	—	10,500	210,000
Chinyun	2,400	60,000	50	1,000	500	14,000	100	2,200	—	—
Total	166,405	2,940,790	113,214	1,863,790	11,340	257,600	17,975	355,540	10,500	210,000

The rape-seed oil produced in Chekiang goes entirely to consumers in the province. With regard to tea-oil, half of the 1,240 piculs produced in Kiangshan was sent to Ch'ühsien, while that extracted in Lanchi and Chinyun is mostly shipped to Yungchia. About 60 per cent of the vegetable tallow made is kept for local consumption, and of the tung oil about one-fourth is sent to other provinces and abroad, with Hangchow, Yungchia. Ch'ühsien, and Lanch'i centres of distribution. Cotton-seed oil from Ninghsien has a good demand in Shanghai, Yungchia, Shaohsing, and Huangyen.

Tung oil intended for export is usually packed in old kerosene-tins and bamboo crates lined with bamboo sheaths. The net weight of a tin is 30 catties, and of a crate, 56 catties. For transportation purposes crates are made up in twos and tins in fours to form a "unit."

Vegetable tallow is always packed in rush sacks protected by bamboo netting, each sack or "unit" weighing about 92 catties. Tea oil is packed in old kerosene-tins in the same manner as tung-oil, each tin weighing 30 catties.

Before the opening of the Hangchow-Kiangshan Railway, oil from the interior of Chekiang province was transported by junks and rafts, or by carriers where water facilities were lacking, the freight being about 30 cents a unit from Ch'ühsien to Hangchow, 20 cents from Lanch'i to Hangchow, and 80 cents from Chinyun to Yungchia, while freight by rail from Hangchow to Shanghai is now about 70 cents and from Yungchia to Shanghai, about 75 cents. Transit charges average about 80 cents per 100 catties.

According to Customs reports, the annual export of Tung oil from Chekiang through Hangchow and Yungchia amounts to about 40,000 piculs, and of tea oil and vegetable tallow about 10,000 and 3,000 piculs respectively. The following table shows further details:

Year	Export from Hangchow Piculs	Hangchow Hk. Tls.	Export from Yungchia Piculs	Yungchia Hk. Tls.
Tung Oil				
1927	697	19,168	28,008	504,147
1928	462	17,787	22,081	470,325
1929	6,391	239,663	35,913	718,260
1930	11,904	368,880	29,812	596,240
1931	9,311	302,608	18,875	339,750
Vegetable Tallow				
1927	48	528	116	2,083
1928	—	—	2,633	39,495
1929	17	221	3,078	43,092
1930	23	299	4,013	64,208
1931	23	391	2,829	45,264
Tea Oil				
1927	—	—	10,046	165,759
1928	17	340	6,626	106,016
1929	—	—	8,032	128,512
1930	—	—	11,654	186,464
1931	—	—	10,401	195,019

TRADING METHODS

Trade in vegetable oils may be grouped in three categories—between farmers and local mills, between the mills and oil brokers (*yu hong* 油行), and between Chinese merchants and foreign exporters.

Between Farmers and Mills—When seeds are about to be harvested, local mills send representatives to the various producing districts to collect supplies. Transactions are always on a cash basis, with *tou* (斗) and *shih* (石) as the standard units of measure. The seed thus collected is partly for the mills' own consumption and partly for the use of other mills in places remote from the producing districts. Not infrequently, however, farmers themselves extract the oil and sell this to the mill representatives instead of seed.

Between Mills and Brokers—Though mills in the interior often have direct transactions with brokers in Hangchow and Yungchia, it is the usual practice to dispose of their products through local brokers, who receive commissions ranging from one to three per cent on the com-

pletion of sales. Brokers in Hangchow and Yungchia, in turn, send the oil to Shanghai brokers, freight being usually paid by the seller.

Between Chinese Merchants and Foreign Exporters—Transactions are concluded either through middlemen or direct between Chinese merchants and foreign exporters, and deliveries may be spot or forward. Oil shipped to Europe is always sold by the ton, while shipments to the United States are calculated in pounds. Strict examination of consignments is made before being accepted for shipment.

CHAPTER IX

WINE AND SOY

THE production of wine in Chekiang is far more important than the making of soy, the annual output of the former being 108,874,000 catties. The history of wine-making goes back to the time when Tu K'ang (杜康) first made "sweet" wine 1,400 years ago. During the Sung Dynasty Chekiang wine was sent in the form of tribute to the Imperial House, and owing to the fine quality of the water used in brewing, Shaohsing wine still retains its high reputation, although the primitive method of brewing is still followed. The output of soy from Chekiang is large, but is made by the old method. Vinegar is a by-product of brewing, and the output is much smaller than that of wine and soy.

With the exception of Changhua, wine is produced in every district in Chekiang, districts of Chinhua, Chuchow, and Yenchow prefectures producing *huang chiu* (黃酒) or "yellow" wine, and *t'u shao* (土燒) or native samshu; districts in Hangchow, Chiahsing, and Huchow prefectures make *huang chiu, t'u shao,* and *tsao shao* (糟燒), or distiller's grain samshu; districts in Taichow, Chuchow, and Wenchow prefectures produce *huang chiu* and *tsao shao;* Ningpo prefecture makes *huang chiu* only; while Shaohsing prefecture, in addition to *huang chiu, tsao, shao,* and *t'u shao,* is well known for its Shaohsing wine. The output from different prefectures, according to importance, is in the following order; Shaohsing, Hangchow, Ningpo, Chiahsing, Wenchow, and Chuchow. In Shaohsing the wine-producing area is divided into eight zones, the city, Tungpu (東浦), Yuan She (阮社), Ko Ch'iao (朽橋), Ch'ien Tsing (錢清), An Chang (安昌), Kao Pu (皋埠) and Tung Kuan (東關).

The city zone includes not only the area within the city wall, but a number of villages and towns nearby, and

there are 343 breweries scattered about this zone. The Tungpu zone is situated about 13 *li* north of the city, and contains 530 breweries. Yuan She is 23 *li* west of the city, and although it has only 388 brewing-houses represents the most prosperous area in the brewing business. Ko Ch'iao lies about 3 *li* south of Yuan She and about 20 *li* from the city, and has 268 brewing houses. The Ch'ien Tsing zone, on the border of Hsiaoshan and Shaohsing, has a small number of breweries, 74 only, while An Chang, 65 *li* northwest of the city, has the smallest number, 41. Kao Pu, 20 *li* east of the city, has 294 brewing houses, while Tung Kuan, despite its large area, has only 92.

Hsiaoshan, owing to its vicinity to Shaohsing, is also a centre for producing what is known as Shaohsing wine, the breweries at Tantowchen (潭頭鎮), Wenyenchen (聞堰鎮), Ich'iaochen (義橋鎮), Kualichen (爪瀝鎮), Lunglungshanchen (龍龍山鎮), Yupuchieh (漁浦街), Chaochiawu (趙家塢) and Ts'unk'ou (村口), mostly making Shaohsing wine. In Ninghsien (Ningpo) is a spring providing water particularly suitable for making wine, but the breweries are scattered all over the district, and not clustered together as in Shaohsing. This is also true of other wine-producing districts in Chekiang.

The brewing houses in Shaohsing have the largest capital, those in Ningpo come next, and Hangchow third, while those in other districts are very seldom capitalized at more than a few thousand dollars. In Shaohsing there are altogether 2,030 brewing houses, 70 per cent having a capital of less than $7,000, and 28 per cent with less than $10,000, but over $5,000, while the remaining 2 per cent have capital of over $10,000. In the city of Shaohsing the Yao Yueh Hsing (姚越興), and Shen Yung Ho (沈永和), at Mochuang (墨莊) Heng Chang (恆昌), at Tungpu the Yuan Yuan (源元), at Yuan She the Chang Chang Kee (章彰記), Mao Ta Sheng (茅大升), Chang Tung Ming (章東明), Yeh Wan Yuan (葉萬源), Chang Wan Jun (章萬潤), and at Kiang Tow (江頭) the Chang Hsing Hao, (張興浩) are the leading manufacturers, each turning out from 1,400 to 3,000 large jars of wine, but

the Yao Yueh Hsing and Shen Yuen Ho make less than 1,000 jars. The largest houses in Shaohsing have their own agents in Shanghai, Hangchow, and Ningpo.

Soy-makers in Chekiang sometimes make only soy, sometimes make wine as a secondary business, and sometimes also cure hams and sell oil too, the last type being the most common. In Hangchow and Hanghsien are found the largest number of soy-manufacturers, numbering 322; in Yungchia there are 141, in Ningpo about 80, while in other districts the number varies from 10 to 60. The capital invested be as large as $120,000, as for the Tung Fu Tai (同福泰), in Hangchow, or less than $2,000. The following table gives details of the more important breweries and soy-manufacturing houses in Chekiang:—

SHAOHSING

		Product	Annual Output (Jars)	Capital	Workers	Established
Yao Yueh Hsing	(姚越興)	Shaohsing Wine	620	—	—	—
Tai Chang	(泰昌)	„ „	400	—	—	—
Chiu Ta	(久大)	„ „	400	—	—	—
Yen King	(延陵)	„ „	400	—	—	—
Wan Feng	(萬豐)	„ „	380	—	—	—
Heng Chang	(恆昌)	„ „	1,295	—	—	—
Chien Yu	(謙豫)	„ „	400	—	—	—
Wu Hsing Mei	(吳興美)	„ „	320	—	—	—
Shen Yung Ho	(沈永和)	„ „	320	$100,000	30	200 years.
Chou Hung Shun	(周洪順)	„ „	160	—	—	—
Chih Chou	(赤周)	„ „	160	—	—	—
Chung Hsiu Huan	(忠秀煥)	„ „	160	—	—	—

		Product		Annual Output (Jars)	Capital	Workers	Established
Kung Mei Chun	(宮美椿)			155	—	—	—
Chih Ping Hsieh	(始平協)	,,	,,	160	—	—	—
Heng Mao Kui	(恆茂貴)	,,	,,	180	—	—	—
I An Chung	(遺安忠)	,,	,,	160	—	—	—
Kung Chi	(公　濟)	,,	,,	160	—	—	—
Pao Ho	(寶　和)	,,	,,	830	—	—	—
Jui Ho	(瑞　和)	,,	,,	200	—	—	—
Feng Hsiang Hua	(鳳祥華)	,,	,,	615	—	—	—
Shun Hsing Hsiang	(順興相)	,,	,,	515	—	—	—
Chi Ho K'ui	(致和奎)	,,	,,	400	—	—	—
Yung Yuan Kui	(泳源桂)	,,	,,	477	—	—	—
Kung Teh Cheng	(功德成)	,,	,,	160	—	—	—
An Ting Hsin	(安定信)	,,	,,	160	—	—	—
Tien Hsing Ying	(天興英)	,,	,,	160	—	—	—
Hao Hsing Erh	(鶴興二)	,,	,,	710	—	—	—
Hsiao Chen Sheng	(孝貞升)	,,	,,	690	—	—	—
Yung Mao Ch'u	(永茂楚)	,,	,,	160	—	—	—
Yuan Yuan	(源　元)	,,	,,	1,272	—	—	—
Jui Yuan Mei	(瑞源美)	,,	,,	160	—	—	—
Chung I	(忠　義)	,,	,,	680	—	—	—
P'eng Chi Hsiang	(彭記祥)	,,	,,	575	—	—	—
Chang Chang Chi	(章彰記)	,,	,,	1,395	$27,900	24	—
Huan Chi Cheng	(煥記正)	,,	,,	830	—	—	—

		Product		Annual Output (Jars)	Capital	Workers	Established
Mao Chu Hsing	(茅聚興)	„	„	670	—	—	—
Chang Tung Mao	(章同茂)	„	„	520	—	—	—
Feng Tung Sheng	(馮東升)	„	„	860	—	—	—
Mao Ta Sheng	(茅大升)	„	„	2,570	$40,000	26	—
Chang Pei Chi	(章佩記)	„	„	721	—	—	—
Ch'uan Ch'eng Ch'ing	(全城慶)	„	„	590	—	—	—
Chang Kui Chi	(章桂記)	„	„	590	—	—	—
Ch'uan Ch'eng Ming	(全城明)	„	„	896	—	—	—
Chang Tung Ming	(章東明)	„	„	1,780	$25,600	—	—
Heng Shen	(恆　慎)	„	„	530	$46,000	27	—
Yeh Wan Yuan	(葉萬源)	„	„	2,300	—	—	—
Chang Wan Jun	(章萬潤)	„	„	2,910	$38,100	28	—
Chung I Jui	(忠義瑞)	„	„	400	—	—	—
Chang P'ing Hsui	(章平秀)	„	„	400	—	—	—
Chu Szu Teh	(朱思德)	„	„	386	—	—	—
Feng Heng Shun	(馮恆順)	„	„	410	—	—	—
Chang Fang Chi	(章芳記)	„	„	380	—	—	—
Tien Teh Jun	(田德潤)	„	„	320	—	—	—
Chang Pao Tai	(章寶泰)	„	„	400	—	—	—
Mao Ching Kee	(茅慶記)	„	„	370	—	—	—
Chang Yueh Chuan	(章月泉)	„	„	245	—	—	—
Mao Chang Hsing	(茅正興)	„	„	475	—	—	—
Mao Wan Yu	(茅萬裕)	„	„	301	—	—	—

		Product		Annual Output (Jars)	Capital	Workers	Established
Jen Tai	(忍　泰)	〃	〃	201	—	—	—
Chang Chien Chi	(章鑑記)	〃	〃	301	—	—	—
Wan Yuan	(萬　源)	〃	〃	405	—	—	—
Chu Hsing Yung	(聚興榮)	〃	〃	245	—	—	—
Chang Chin Chi	(章金記)	〃	〃	336	—	—	—
Mao Chang Shun	(茅長順)	〃	〃	263	—	—	—
Shan Yuan Tai	(善元泰)	〃	〃	330	—	—	—
Chang Hsiu Chi	(章秀記)	〃	〃	195	—	—	—
Chin Cheng Hsin	(金城信)	〃	〃	190	—	—	—
Shih Ting Hua	(史庭華)	〃	〃	231	—	—	—
Wei Jui Kee	(魏瑞記)	〃	〃	195	—	—	—
Wan Yuan	(萬　源)	〃	〃	200	—	—	—
Teh Hsing Hua	(德興華)	〃	〃	116	—	—	—
Ssu Ho Liang	(思和良)	〃	〃	121	—	—	—
Jen Ho Fu	(仁和福)	〃	〃	135	—	—	—
Jen Ho Lung	(仁和龍)	〃	〃	126	—	—	—
Yeh Yuan Tai	(葉源泰)	〃	〃	105	—	—	—
Chen Huan Kung	(澄寰公)	〃	〃	461	—	—	—
Jen Hsieh Kung	(仁協公)	〃	〃	134	—	—	—
Teh Yuan	(德　源)	〃	〃	600	—	—	—
Chang Hsing Hao	(長興浩)	〃	〃	1,850	$34,300	30	—
Sung Wen Sheng	(宋文盛)	〃	〃	320	—	—	—
Hsieh I Li	(協義利)	〃	〃	103	—	—	—

		Product		Annual Output (Jars)	Capital	Workers	Established
Heng Hsing San	(恆興三)	„	„	109	—	—	—
Ting Hou Kung	(亭后公)	„	„	354	—	—	—
Hsin Cheng	(信　誠)	„	„	593	$6,000	20	—
Teh Yuan	(德　源)	„	„	600	—	—	—
I Hsing	(義　興)	„	„	160	—	—	—
Heng Tai	(恆　泰)	„	„	310	—	—	—
Kung Chi	(公　記)	„	„	573	$16,000	20	—
Hsiao Heng Yu	(蕭恆裕)	„	„	600	$9,300	20	—
Ping Hsing Kung	(炳興公)	„	„	266	—	—	—
Mao Yu Sheng	(茅裕生)	„	„	160	—	—	—
Heng Yu	(恆　裕)	„	„	872	—	—	—
Sung Wan Sheng	(孫萬盛)	„	„	106	—	—	—
Wan Hsiang Hsieh	(萬祥協)	„	„	250	—	—	—
Ma Shang Hou Chi	(馬上侯季)	„	„	375	—	—	—
Ma Shang Hou Ch'uan	(馬上侯全)	„	„	133	—	—	—
Chin Chung Jen	(金忠仁)	„	„	160	—	—	—
Ta Sheng Chang	(大生昌)	„	„	160	—	—	—
Chien Ta Chang	(錢大昌)	„	„	160	—	—	—
Li Cheng Chang	(李誠章)	„	„	400	—	—	—
Wang Mao Tai	(王茂泰)	„	„	80	—	—	—
Yueh Hsing Chang	(越興昌)	„	„	80	—	—	—
Sung Mao Hsiang	(松茂翔)	„	„	260	—	—	—
Shun Hsing Chen	(順興震)	„	„	175	—	—	—

		Product		Annual Output (Jars)	Capital	Workers	Established
Sung Mao Chow	(松茂州)	„	„	1,010	—	—	—
Jun Hsiang K'ang	(潤興康)	„	„	100	—	—	—
Chin Mao K'ang	(錦茂康)	„	„	400	—	—	—
Chin Mao Ch'a	(錦茂槎)	„	„	160	—	—	—
Tung Yuan	(同　源)	„	„	115	—	—	—
Hsieh Chang	(協　昌)	„	„	149	—	—	—
Wang Ho Hsing	(汪合興)	„	„	400	—	—	—
Li Sheng	(立　盛)	„	„	190	—	—	—
Shao Ting	(紹　鼎)	„	„	200	—	—	—
Chin Tung Ch'un	(金同春)	„	„	595	—	—	—
T'ung Ch'un Fang	(同春芳)	„	„	577	—	—	—
Wan Shun Hsin	(萬順信)	„	„	235	—	—	—
Wan Shun Yung	(萬順鏞)	„	„	415	—	—	—
Heng Shun Wen	(恆順文)	„	„	490	—	—	—
Heng Shun Yao	(恆順堯)	„	„	185	—	—	—
Heng Shun Ch'un	(恆順春)	„	„	589	—	—	—
Yü Ting	(羽　定)	„	„	160	—	—	—
Teh Ta	(德　大)	„	„	390	—	—	—
Ch'ien Yü	(謙　豫)	„	„	780	—	—	—
Chu Hsing Sung	(聚興松)	„	„	273	—	—	—
Wan Ho	(萬　和)	„	„	260	—	—	—
Pao Fu Chi	(鮑福記)	„	„	170	—	—	—
Yuan Chang	(源　昌)	„	„	400	—	—	—

		Product		Annual Output (Jars)	Capital	Workers	Established
Heng Hsing San	(恆興三)	„	„	109	—	—	—
Ting Hou Kung	(亭后公)	„	„	354	—	—	—
Hsin Cheng	(信　誠)	„	„	593	$6,000	20	—
Teh Yuan	(德　源)	„	„	600	—	—	—
I Hsing	(義　興)	„	„	160	—	—	—
Heng Tai	(恆　泰)	„	„	310	—	—	—
Kung Chi	(公　記)	„	„	573	$16,000	20	—
Hsiao Heng Yu	(協恆裕)	„	„	600	$9,300	20	—
Ping Hsing Kung	(炳興公)	„	„	266	—	—	—
Mao Yu Sheng	(茅裕生)	„	„	160	—	—	—
Heng Yu	(恆　裕)	„	„	872	—	—	—
Sung Wan Sheng	(孫萬盛)	„	„	106	—	—	—
Wan Hsiang Hsieh	(萬祥協)	„	„	250	—	—	—
Ma Shang Hou Chi	(馬上候季)	„	„	375	—	—	—
Ma Shang Hou Ch'uan	(馬上候全)	„	„	133	—	—	—
Chin Chung Jen	(金忠仁)	„	„	160	—	—	—
Ta Sheng Chang	(大生昌)	„	„	160	—	—	—
Chien Ta Chang	(錢大昌)	„	„	160	—	—	—
Li Cheng Chang	(李誠章)	„	„	400	—	—	—
Wang Mao Tai	(王茂泰)	„	„	80	—	—	—
Yueh Hsing Chang	(越興昌)	„	„	80	—	—	—
Sung Mao Hsiang	(松茂翔)	„	„	260	—	—	—
Shun Hsing Chen	(順興震)	„	„	175	—	—	—

		Product		Annual Output (Jars)	Capital	Workers	Established
Sung Mao Chow	(松茂州)	〃	〃	1,010	——	——	——
Jun Hsiang K'ang	(潤興康)	〃	〃	100	——	——	——
Chin Mao K'ang	(錦茂康)	〃	〃	400	——	——	——
Chin Mao Ch'a	(錦茂槎)	〃	〃	160	——	——	——
Tung Yuan	(同　源)	〃	〃	115	——	——	——
Hsieh Chang	(協　昌)	〃	〃	149	——	——	——
Wang Ho Hsing	(汪合興)	〃	〃	400	——	——	——
Li Sheng	(立　盛)	〃	〃	190	——	——	——
Shao Ting	(紹　鼎)	〃	〃	200	——	——	——
Chin Tung Ch'un	(金同春)	〃	〃	595	——	——	——
T'ung Ch'un Fang	(同春芳)	〃	〃	577	——	——	——
Wan Shun Hsin	(萬順信)	〃	〃	235	——	——	——
Wan Shun Yung	(萬順鏞)	〃	〃	415	——	——	——
Heng Shun Wen	(恆順文)	〃	〃	490	——	——	——
Heng Shun Yao	(恆順堯)	〃	〃	185	——	——	——
Heng Shun Ch'un	(恆順春)	〃	〃	589	——	——	——
Yü Ting	(羽　定)	〃	〃	160	——	——	——
Teh Ta	(德　大)	〃	〃	390	——	——	——
Ch'ien Yü	(謙　豫)	〃	〃	780	——	——	——
Chu Hsing Sung	(聚興松)	〃	〃	273	——	——	——
Wan Ho	(萬　和)	〃	〃	260	——	——	——
Pao Fu Chi	(鮑福記)	〃	〃	170	——	——	——
Yuan Chang	(源　昌)	〃	〃	400	——	——	——

		Product	Annual Output (Jars)	Capital	Workers	Established
Tseng Chi Yü	(增記玉)	Shaohsing Wine	121	—	—	—
Wang Wan Sheng	(王萬盛)	„ „	110	—	—	—
Ta Chang Pei Hao	(大昌北號)	„ „	—	—	—	1930
Ta Chang Nan Hao	(大昌南號)	„ „	—	—	—	1929
Ta Tung Yuan	(大通源)	„ „	—	$2,000	—	1929
Heng Chang Ting Yuan	(恒昌鼎園)	„ „	—	$6,000	56	over 100 years ago.
Sung Wan Shen Cheng Chi ...	(宋文盛正記)	„ „	—	$3,000	49	1928
Tung Shun Hsing	(同順興)	„ „	—	$2,000	15	1930
Ch'ien Yu	(謙豫)	„ „	—	$16,000	53	1927
Yung Ho	(永和)	Soy	—	$6,000	27	1913
Wan Hsing	(萬興)	Shaohsing Wine	—	$6,000	42	1879
I Chang	(義昌)	„ „	—	$5,000	37	over 100 years ago.
Ho Fu Chang	(和福昌)	„ „	—	$10,200	42	1912
Shen Tung Mei Lao Chi	(沈通美老記)	„ „	—	$5,000	19	1915
Shen Tung Mei Hsin Chi	(沈通美新記)	„ „	—	$8,000	29	1920
Lin Ho Hsing	(劉合興)	„ „	—	$20,000	52	1906
Wong Yuan Sheng	(王源盛)	„ „	—	$3,000	34	1919
Jen Chang	(仁昌)	„ „	—	$12,000	63	1890
Chien I	(謙益)	„ „	—	$10,000	42	1912
Tung Hsing	(同興)	„ „	—	$12,000	44	1914
Sheng Heng Tai	(盛亨泰)	„ „	—	$8,000	7	1927

NINGHSIEN

		Product	Annual Output	Capital	Workers	Established
Chen Sheng Hao	(陳生號)	Wine	$ 8,000	$2,000	——	over 40 years ago.
Tai Ho Shun Chi	(太和順記)	,,	7,000	2,000	——	1917
Fan Pin Li	(范資利)	,,	7,000	2,000	——	33 years
Chow Shen Tai Chi	(周生泰記)	,,	10,000	3,000	——	over 10 years
Yuan Hsiang Ho Cheng Chi ..	(源祥和成記)	,,	6,000	2,000	——	over 10 years
Kung Cheng Ho I Chi	(公郎和義記)	,,	6,000	2,000	——	over 10 years
Cheng Kung Ho Jen Chi	(鄭公和仁記)	,,	5,000	2,000	——	over 100 years
Hsiang Ho	(祥　和)	,,	7,000	2,000	——	over 10 years
Chang Hsin Mao	(張信茂)	Wine & Soy	17,000	7,000	——	——
Chang Chin Ta Yuan Chi	(張晉大源記)	Wine	12,000	4,000	——	Reorganized in 1928
Fan Pin Li Sheng Chi	(范資利甥記)	,,	12,000	10,000	——	1923
Fan Lung Ta Feng Chi	(范隆大豐記)	,,	8,000	2,000	——	1893
Fan Pin Li Hsing Chi	(范資利興記)	,,	10,000	5,000	——	——
Shun Li	(順　利)	,,	7,000	1,000	——	1928
Yu Mao	(榆　茂)	,,	7,000	2,000	——	1928
Chien Kang Cheng	(乾康成)	,,	20,000	6,000	——	——
Jun Feng	(潤　豐)	Wine & Soy	10,000	——	——	——
Ta Yuan	(大　源)	,, ,,	6,500	——	——	——
Chuan Tung	(泉　通)	,, ,,	8,000	——	——	——
Li Wan Yuan	(李萬源)	,, ,,	5,000	——	——	——
Shun Yu	(順　餘)	,, ,,	5,000	——	——	——
Chuan Chang	(泉　昌)	,, ,,	7,500	——	——	——

		Product		Annual Output	Capital	Workers	Established
Ta Ch'un	(大 春)	,,	,,	$ 7,500	——	——	——
Wan Kang Tai Chi	(萬康泰記)	,,	,,	4,000	——	——	——
Wan Ho Cheng	(萬和成)	,,	,,	5,000	——	——	——
Tseng Mao	(增 茂)	,,	,,	35,000	——	——	——
Jun Ho Yu	(潤和寓)	,,	,,	10,000	——	——	——
Chang Hsin Mao	(張信茂)	,,	,,	9,000	——	——	——
Kung Ho	(公 和)	,,	,,	39,500	——	——	——
Wu Chang	(五 昌)	,,	,,	15,000	——	——	——
Heng I	(恆 益)	,,	,,	10,000	——	——	——
Tzu Kang	(滋 康)	,,	,,	10,000	——	——	——
Ta Mei	(大 美)	,,	,,	40,000	——	——	——
Lou Heng Sheng Mao Chi	(樓恆盛茂記)	,,	,,	50,000	——	——	——
Wan Ho	(萬 和)	,,	,,	20,000	——	——	——
Chang Tseng Chi	(張增記)	,,	,,	35,000	——	——	——
Tsai Ch'un Hao	(蔡春號)	,,	,,	30,000	——	——	——
Kuang Jun	(廣 潤)	,,	,,	30,000	——	——	——
Lou Ting Sheng Tung Chi ...	(樓鼎盛通記)	,,	,,	42,000	——	——	——
Kuang Mei	(廣 美)	,,	,,	30,000	——	——	——
Tsai Hung Mao	(蔡宏茂)	,,	,,	20,000	——	——	——
Ting Mao	(鼎 茂)	,,	,,	22,000	——	——	——
Wan Shun	(萬 順)	,,	,,	35,000	——	——	——
Hsin Ho	(信 和)	,,	,,	34,800	——	——	——
Shih Kung Ho	(史公和)	,,	,,	15,000	——	——	——

		Product	Annual Output	Capital	Workers	Established
Chi Ho	(志和)	,, ,,	$25,000	—	—	—
Lou Yung Chang	(樓永昌)	,, ,,	23,000	—	—	—
Ta Mao	(大茂)	,, ,,	30,000	—	—	—
Tsui Yuan	(萃源)	,, ,,	22,000	—	—	—
Chang Hsin Mao	(張信茂)	,, ,,	10,000	—	—	—
Wan Li	(萬利)	,, ,,	10,000	—	—	—
I Ho	(益和)	,, ,,	8,000	—	—	—
Hsiang Kang	(祥康)	,, ,,	5,000	—	—	—
Hui Yu	(穗餘)	,, ,,	8,000	—	—	—
Wan Hsing	(萬興)	,, ,,	6,000	—	—	—
I Feng	(益豐)	,, ,,	3,000	—	—	—
Lin Chi Sheng	(林集生)	Soy	1,200	—	—	—
Shen Chi	(愼記)	,,	1,000	—	—	—
Shun Mao	(順茂)	,,	4,000	—	—	—
Wu Pao Ho	(吳寶和)	,,	3,000	—	—	—
Teh Hua	(德華)	,,	2,500	—	—	—
		HANGCHOW MUNICIPALITY				
Tung Fu Tai	(同福泰)	Soy	$190,000	$120,000	54	—
Ch'un Ho	(春和)	,,	405,000	142,000	50	—
Chien Fa	(乾發)	,,	115,000	10,000	16	—
Cheng Hsing	(正興)	,,	95,000	18,000	25	—
Hung Chi Hsiang	(鴻吉祥)	,,	86,000	10,000	36	—
Yung Chang	(永昌)	,,	50,000	20,000	16	—

		Product	Annual Output	Capital	Workers	Established
Wei Ho	(惟　和)	,,	$50,000	$20,000	32	—
Heng Tai	(恆　泰)	,,	50,000	10,000	22	—
Huang Yuan Hsing	(黃源興)	,,	50,000	8,000	15	—
Hung Chi Hsiang (Branch) ...	(洪吉祥分號)	,,	50,000	1,000	5	—
Yuan Tai	(元　泰)	,,	49,000	10,000	17	—
Cheng Hsing	(正　興)	,,	43,200	5,000	18	—
Kuang I	(廣　義)	,,	38,000	16,000	24	—
Heng Chi	(恆　記)	,,	36,000	1,500	6	—
I Ho	(怡　和)	,,	32,000	2,500	10	—
Teh Mao Tai	(德茂泰)	,,	30,000	8,000	15	—
Wei Ho Hsi Hao	(惟和西號)	,,	29,000	1,000	5	—
Chien Fa Hsi Hao	(乾發西號)	,,	26,000	4,800	7	—
Hsiao Hung Yu	(蕭恆裕)	,,	25,000	1,200	9	—
Ch'un Ho Peh Hao	(春和北號)	,,	25,000	1,000	9	—
Hsin Ta Chang	(新大昌)	,,	21,500	4,500	7	—
Kuang I	(廣　義)	,,	21,000	800	12	—
Hsiang Ho	(祥　和)	,,	20,000	1,000	7	—
Lu Yung Ho	(羅永和)	,,	20,000	5,000	18	—
Chang Chuan Mao	(章全茂)	,,	18,660	—	—	—
Hsu Teh Chang	(徐德昌)	,,	10,000	—	—	—
		HANGHSIEN				
Heng Tai	(恆　泰)	Soy	$36,400	—	—	—
Tung Chang	(同　昌)	,,	14,000	—	—	—

		Product	Annual Output	Capital	Workers	Established
Hung Chang	(洪　昌)	〃	$10,000	—	—	—
Chia Shun Sheng	(嘉順生)	〃	9,000	—	—	—
Wang Ho Hsing	(汪合興)	〃	10,000	—	—	—
Wang Tung Fu	(汪同福)	〃	12,000	—	—	—
Yao Yung Hsing	(姚永興)	〃	10,000	—	—	—
Wang I Hsing	(汪益興)	〃	43,720	—	—	—
Feng Yuan Shun	(馮源順)	〃	103,700	—	—	—
Feng Yuan Shun, (Branch) ...	(馮源順分園)	〃	10,060	—	—	—
Tai Hui Jen	(戴穗仁)	〃	35,864	—	—	—
Tung Ho	(同　和)	〃	27,930	—	—	—
Yu Ta Hsing	(俞大興)	〃	27,000	—	—	—
Shen Yung Shun	(沈永順)	〃	16,500	—	—	—
Feng Yuan Shun Branch	(馮興順分號)	〃	11,360	—	—	—
Wang I Hsing	(汪益興西號)	〃	3,600	—	—	—
Wang I Hsing Nan Hao	(汪益興南號)	〃	8,308	—	—	—
Huang Yuan Hsing	(黃源興)	〃	6,000	—	—	—
Ma San Ho Chen Yuan	(馬三和成園)	〃	10,000	—	—	—
Ma San Ho Chi Hsi Hoo	(馬三和成記西號)	〃	2,500	—	—	—
Ma San Ho Tung Hao	(馬三和成記東號)	〃	2,500	—	—	—
Ting Ho	(鼎　和)	〃	50,000	—	—	—
Chih Ho	(致　和)	〃	50,000	—	—	—

		Product	Annual Output	Capital	Workers	Established
YUYAO						
Sheng Cheng Shun	(盛正順)	Soy	$22,940	—	—	—
Wu I Chang	(吳義昌)	„	18,000	—	—	—
Tsai Heng Sheng	(蔡恆升)	„	10,000	—	—	—
Ting Ho Lung	(鼎和隆)	„	33,800	—	—	—
Ting Ho Lung Hsin Hao	(鼎和隆新號)	„	4,020	—	—	—
Ting Ho Chien Nan Hao	(鼎和乾南號)	„	3,600	—	—	—
Ting Ho Chien Branch	(鼎和乾分號)	„	14,800	—	—	—
Chin Chi Feng	(金緻豐)	„	2,500	—	—	—
Chin Chi Feng, Peh Hao	(金緻豐北號)	„	9,000	—	—	—
FENSHUI						
Chung Ho Chung Chi	(中和仲記)	Soy	60 jars	—	—	—
FUYANG						
Kung Ho	(公　和)	Soy & Wine	—	—	—	—
Chang Tung Ho	(張同和)	„ „	—	—	—	—
HSINTENG						
Chih Ho	(致　和)	Soy & Wine	—	—	—	—
Hsin Teng Ho	(新登和)	„ „	—	—	—	—
HSUANPING						
Mei Ho	(美　和)	Soy & Wine	—	—	—	—

		Product	Annual Output (Jars)	Capital	Workers	Established
YUNHO						
Yeh Hsing Sheng	(葉興順)	Wine	—	—	—	—
Liu Yuan Hsing	(柳元興)	"	—	—	—	—
Liu Heng Chang	(柳恆昌)	"	—	—	—	—
Ho Pai Tai	(何百泰)	"	—	—	—	—
Wei Yung Ho	(魏永和)	—	—	—	—	—
TUNGLU						
Fu Hsing Ho	(福興和)	Soy & Wine	—	—	—	—
Hsiang Feng	(祥豐)	" "	—	—	—	—
Tung Jen Hsiang	(同仁祥)	" "	—	—	—	—
Yung Ch'un	(榮春)	" "	—	—	—	—
CHINYUN						
Kang Yu	(康裕)	Wine	—	—	—	—
I Tai Chen	(義泰正)	Soy	—	—	—	—
Ting Chen Ho	(丁正和)	"	—	—	—	—
I Hsing Chung Chi	(義興中記)	"	—	—	—	—
I Ho	(義和)	"	—	—	—	—
Yung I Feng	(永義豐)	"	—	—	—	—
Yu Chang	(裕昌)	"	—	—	—	—
CHIASHAN						
Fu Shun	(福順)	Wine	190 jars.	$500	—	1916
Wang Kung Cheng	(王公正)	Wine & Soy	186 55	4,000	—	1919

		Product	Annual Output (Jars)		Capital	Workers	Established
Ting Mao Hsin	(鼎茂新)	„ „	230	80	$8,000	——	1916
Wang Yuan Shun	(王源順)	„ „	202	20	1,000	——	——
Kiang Ting Sheng	(江鼎昇)	„ „	168	30	5,000	——	1873
Kiang Shang Sheng	(江上盛)	„ „	216	35	5,000	——	1862
Fu Sheng	(福 盛)	„ „	230	80	8,000	——	1867
Tseng Mao Yuan	(增茂源)	„ „	45	12	1,000	——	——
Chin Sung Sheng	(金松盛)	„ „	192	—	2,000	——	1841
		PINGHU					
Hsu Hsieh Chi	(徐協記)	Wine	200	jars.	$2,000	——	1900
Hsu Yuan Yuan	(徐源源)	„	200		2,000	——	1875
Tung Sheng Chang	(同盛昌)	„	190		1,000	——	1914
Tung Kang	(同 康)	„	190		1,600	——	1915
Hsing Chi	(興 記)	„	190		1,600	——	1917
Yu Hsing I	(裕興義)	Wine	190		1,600	——	1917
Hsu Ting Feng	(徐鼎豐)	Soy	170		4,500	——	——
Yu Ting Hsing	(俞鼎新)	„	65		3,000	——	——
Tung Ting Hsin	(東鼎新)	„	15		1,500	——	1886
Ting Hsin Hsieh	(鼎新協)	„	30		2,000	——	1893
Huang Hsiang Ho	(黃祥和)	„	30		10,000	——	1882
Tung Ting Feng	(東鼎豐)	„	35		2,000	——	1875
Hsi Ting Feng	(西鼎豐)	„	115		3,000	——	1875
Ho Heng Tai	(何恒泰)	„	60		2,000	——	1895
Tung Kang	(同 康)	„	70		3,000	——	1900

		Product	Annual Output (Jars)	Capital	Workers	Established
Tai Ting Ho	(戴鼎和)	〃	33	$2,000	—	1875
Hsi Ting Ho	(西鼎和)	〃	85	4,500	—	—
Hsu Wan Chang	(徐萬昌)	〃	20	3,000	—	—
Tung Wan Chang	(東萬昌)	〃	40	2,000	—	—
		YUNGCHIA				
Lin Chin Feng	(林進豐)	Soy & Wine	$12,335	$1,000	—	—
Wu Hsieh Sheng	(胡協盛)	〃 〃	14,397	1,000	—	—
Tseng Sen Shun	(曾森順)	〃 〃	8,706	1,000	—	—
Kung Ho	(公和)	〃 〃	82,153	2,000	—	—
Chen Ho	(正和)	Soy	10,526	1,000	—	—
Tai Feng	(泰豐)	Soy & Wine	27,756	1,000	—	—
Wu Hsieh Sheng Fu Chi	(胡協盛福記)	〃 〃	3,579	1,000	—	—
Kuang Shen Ho	(廣生和)	〃 〃	25,788	1,000	—	—
Kuang Tai Ho	(廣太和)	〃 〃	9,574	1,500	—	—
Chi Teh Sheng	(池德盛)	〃 〃	1,500	500	—	—
Kung Shen Ho	(公生和)	〃 〃	5,000	800	—	—
Chien Ho	(乾和)	〃 〃	40,438	9,600	—	—
Yang Yung Feng	(楊永豐)	〃 〃	12,144	500	—	—
Tung Chang	(同昌)	Soy & Wine	69,582	500	—	—
Tung Jen Ho	(同人和)	〃 〃	13,653	1,000	—	—
Kuang Ho	(廣和)	〃 〃	40,000	11,000	—	—
Chen Hsin Ho	(正興和)	〃 〃	12,106	1,000	—	—
Tung Chang Shun Chi	(同昌順記)	〃 〃	12,778	1,000	—	—

		Product	Annual Output	Capital	Workers	Established
Wu Ch'un Ho	(胡春和)	" "	$12,000	$ 500	—	—
Chang Ch'un	(長春)	" "	60,216	2,000	—	—
Kuang Hsin Ho	(廣新和)	Soy & Wine	27,914	500	—	—
Ning Ho	(寧和)	Soy	18,800	500	—	—
I Ho	(怡和)	"	14,000	1,000	—	—
Ta Hsing Ho	(大興和)	Soy & Wine	18,000	3,000	—	—
Ku Tung Ch'un	(谷同春)	" "	15,000	3,000	—	—
		JUIAN				
Chin Jen Ho	(金人和)	Soy & Wine	$ 9,600	$ 500	—	—
Ch'un Shen Ho	(椿生和)	" "	13,360	1,000	—	—
Chiu Tai	(久泰)	" "	10,200	1,000	—	—
Su Kuang Feng	(蘇廣豐)	Soy, Wine, Oil	17,000	500	—	—
Kuang Hsing Li	(廣興利)	Wine	29,000	500	—	—
Kêng Ch'un	(賡春)	Soy & Wine	33,000	3,000	—	—
Tai Ho Yuan	(泰和園)	Soy	7,194	6,000	—	—
Ku Tung Ho	(谷同和)	Soy & Wine	21,000	4,000	—	—
		PINGYANG				
Chieh Ch'un	(介春)	Wine & Soy	$15,800	$ 500	—	—
Tung Ch'un	(同春)	" "	16,000	6,000	—	—
Chen Tai Ho	(陳太和)	" "	8,000	3,000	—	—
Wei Ch'un Ho	(味春和)	" "	3,159	1,50	—	—
Kung Pao Ho	(公寶和)	" "	3,800	500	—	—

		Product	Annual Output	Capital	Workers	Established
Tung Ch'un Ho	(同春和)	„ „	$ 2,500	$ 500	——	——
Chu Ho	(筑 和)	„ „	27,000	——	——	——
Chin Ho	(九 和)	„ „	46,000	——	——	——
Lin Yu Ho	(林裕和)	„ „	4,300	——	——	——
		LOTSING				
Ting Ho	(鼎 和)	Soy & Wine	$ 8,000	$2,000	——	——
Ni Feng Ho	(倪豐和)	„ „	3,000	1,000	——	——
Hung Chang Ho	(宏昌和)	——	——	800	——	——
Chén Ho	(正 和)	——	——	500	——	——
Hung Chang Ho	(宏昌和)	Soy & Wine	1,500	500	——	——
Chu Hsing Ho	(聚興和)	„ „	1,800	600	——	——
Chu Chien Shen	(聚進生)	„ „	1,000	600	——	——
Kuang Shen Ho	(廣生和)	„ „	1,200	800	——	——
I Ho	(益 和)	„ „	2,000	800	——	——
Heng Ho	(恆 和)	——	——	500	——	——
Yao Tung Feng	(姚同豐)	——	——	500	——	——
		YUHUAN				
Lin Cheng Ho	(林成和)	Soy & Wine	$ 1,200	$500	——	——
Chen Wan Ho	(陳萬和)	„ „	1,800	500	——	——
Hsin Shun Ho	(新順和)	„ „	2,000	500	——	——
Yu Tsai Chang	(余再昌)	„ „	1,200	400	——	——
I Ho	(溢 和)	„ „	1,200	300	——	——
Shun Ho	(淳 和)	„ „	2,200	300	——	——

		Product	Annual Output	Capital	Workers	Established
Tsui Ch'un Ho	(醉春和)	,, ,,	$ 1,200	$ 300	——	——
Chow Ch'un Ho	(周春和)	,, ,,	1,200	500	——	——
Chen Tai Ho	(陳泰和)	,, ,,	1,000	500	——	——
Ting Feng Ho	(鼎豐和)	,, ,,	1,000	500	——	——
Kuang Hsing Ho	(廣興和)	,, ,,	1,000	300	——	——
Yuan Ho	(源 和)	,, ,,	12,000	2,000	——	——
Huang Yuan Li	(黃源利)	,, ,,	2,000	500	——	——
Ch'un Sheng Ho	(春生和)	,, ,,	1,200	500	——	——
Wang Tung Hsing	(王同興)	,, ,,	1,200	500	——	——
Ta Sheng Mao	(大生茂)	,, ,,	1,000	500	——	——
Chang Ho	(長 和)	,, ,,	1,200	500	——	——
Huang Yung Hsin	(黃源信)	,, ,,	1,200	200	——	——
Tsai Yuan Feng	(蔡源豐)	,, ,,	1,000	300	——	——
Yeh Ho Sheng	(葉和生)	,, ,,	2,400	700	——	——
Li Tung Feng	(李同豐)	,, ,,	1,200	500	——	——
Cheng Yung Yuan	(鄭永源)	,, ,,	1,000	300	——	——
Cheng Shun Hsing	(鄭順興)	,, ,,	1,000	300	——	——
Yuan Ho Cheng	(源和正)	,, ,,	23,800	1,000	——	——
		CHIENTEH				
Hu Heng Mao	(胡享茂)	Wine	$ 4,000	$20,000	——	1902
Sun Ch'un Yang	(孫春陽)	,,	4,000	$20,000	——	1877
Chih Chung Ho	(致中和)	,,	4,000	$20,000	——	1896
Tung Shun Tai	(同順泰)	,,	2,000	10,000	——	1925
Hu Heng Mao	(胡享茂)	,,	4,000	10,000	——	1906

CHANGSHAN

		Product	Annual Output (Jars)		Capital	Workers	Established
Wu Chang	(五昌)	Wine & Soy	50	15	$5,000	—	1917
Feng Mao	(豐茂)	" "	60	15	4,000	—	1919
Teh Mao	(德茂)	Wine	50	—	5,000	—	1931
Yu Chang	(尤記)	"	60	—	3,000	—	1896
Wan Yuan	(萬源)	Wine & Soy	50	10	1,500	—	1926
Jen Yuan	(仁源)	" "	50	10	3,000	—	1930
Ta Yuan	(達源)	" "	30	30	5,000	—	1873
		KIANGSHAN					
Kung Tai	(公泰)	Wine & Soy	10	40	$3,000	—	1929
San Tai	(三泰)	Soy		4	1,000	—	1926
Ching Fu	(慶福)	"		20	1,500	—	1906
Kung Ho I	(公和義)	"		30	2,000	—	1869
Yu Cheng	(裕成)	"		30	2,000	—	1876
Yu Ho	(裕和)	"		20	1,500	—	1876
		CHINHUA					
Hsin Tai Yuan	(信泰源)	Soy	$ 2,000		—	—	—
Kuang Tai	(廣泰)	"	1,600		—	—	—
Yung Fu Hsiang	(永福祥)	"	6,000		—	—	—
Kung Sheng	(公盛)	"	14,000		—	—	—
Sung Lung Yu	(宋隆裕)	"	3,700		—	—	—
Lung Yu Ho	(隆裕和)	"	4,800		—	—	—

		Product	Annual Output		Capital	Workers	Established
Huang Lung Chang	(黃隆昌)	〃	$5,000		—	—	—
K'un Tai Yu	(坤泰裕)	〃	4,000		—	—	—
Yueh Hsin	(悅　新)	〃	4,000		—	—	—
		LANCHI					
Yuan Mao	(源　茂)	Soy	$17,250		—	—	—
Yung Chang	(永　昌)	〃	19,916		—	—	—
Yuan Chi	(源　記)	〃	18,000		—	—	—
Chang Heng Sheng	(章恆升)	〃	18,334		—	—	—
Hsiang Tai Hung	(祥泰宏)	〃	20,834		—	—	—
Yeh Heng Shun	(葉衡順)	〃	22,500		—	—	—
Kung Yuan Fu	(公源福)	〃	15,416		—	—	—
Tung Feng Jen	(同豐仁)	〃	9,590		—	—	—
Fu Shen Hsiang	(福生祥)	〃	5,000		—	—	—
Tai Feng	(泰　豐)	〃	21,041		—	—	—
Cheng Yuan	(正　元)	〃	13,344		—	—	—
Chu Feng	(聚　豐)	〃	22,500		—	—	—
		CHUHSIEN					
Heng Yuan	(恆　元)	Soy	$ 1,140		$2,000	10	1930
Hou Kang	(厚　康)	〃	1,104		2,000	10	1930
Heng Ta	(恆　大)	〃	4,416		17	17	—
Yeh Chin Hsing	(葉晉興)	Soy & Wine	$3,312	$2,100	4,000	76	—
Yeh Chin Yuan	(葉晉元)	〃 〃	3,312	2,000		16	1919

		Product	Annual Output	Capital	Workers	Established
Chang Hsing	(長興)	〃 〃	$4,747	$2,000	$5,000	18	——
Wang Ching Feng	(王景豐)	〃 〃	7,948	2,000	8,000	19	——
Ch'eng Ting Yuan	(程鼎元)	〃 〃	480	2,000	5,00	17	1875
		SHUNAN					
Li Tai	(利泰)	Wine	——	——	——	——	——
Shao Heng Yuan	(邵恆源)	〃	——	——	——	——	——
Yuan Tai Feng	(源泰豐)	〃	——	——	——	——	——
Yu Lung Hsieh	(裕隆協)	〃	——	——	——	——	——
Tai Yuan Sheng	(泰源昇)	〃	——	——	——	——	——
Tung Ho Tai	(同和泰)	〃	——	——	——	——	——
Chu Hsin Tai	(朱新泰)	〃	——	——	——	——	——
Hu Jui Hao	(胡瑞號)	〃	——	——	——	——	——
Tung I Lung	(同益隆)	〃	——	——	——	——	——
Shao Fu Tai	(邵福泰)	〃	——	——	——	——	——
		SHOUCHANG					
Wu Wan Lung	(吳萬隆)	Wine	22 jars		$800	——	1904
Wang Chen Lung	(汪正隆)	〃	22		800	——	1904
Yung Lung Tai	(永隆泰)	〃	16		600	——	1932
Ch'eng Chien Yu	(程漸裕)	〃	20		800	——	1903
Wang Chin Yu	(汪勤裕)	〃	16		600	——	1927
Liu Chien Heng	(劉乾亨)	〃	16		600	——	1924
Chow Yu Cheng	(周裕成)	〃	24		800	——	1899

		Product	Annual Output (Jars)		Capital	Workers	Established
Ch'eng Sung Feng	(程頌豐)	"	15		$ 100	——	1894
Chen Mao Chang	(震茂昌)	"	21		600	——	1917
Wu Jen Chang	(吳仁昌)	"	20		600	——	1914
Hsieh Lung Tai	(協隆泰)	"	15		600	——	1917
Yung Ta	(溶　大)	Wine	12		$2,000	——	1840
Wang Hung Mao	(汪宏茂)	"	8		1,500	——	1919
Chien Kang	(乾　康)	"	8		1,500	——	1921
		LUNGYU					
Sung Feng Tai	(宋豐泰)	Wine & Soy	280	240	$1,800	——	1913
Wang Chen Feng	(王正豐)	" "	300	300	2,000	——	1871
Kuang Ho	(廣　和)	Wine	300		2,000	——	1919
Fu Tai	(復　泰)	"	100		500	——	1911
I Tai	(義　泰)	"	90		500	——	913
Fu Shun	(福　順)	Wine & Soy	110	60	600	——	1889
Su Wan Sheng	(蘇萬盛)	Wine	50		500	——	1914
Shen Sheng Mao	(沈盛茂)	Wine & Soy	75	60	600	——	1925
Cheng Ta Lai	(張大來)	Wine	79		500	——	1926
Ta Tung	(大　同)	Soy	10 jars		600	——	1932
Kuo Chen Tai	(郭震泰)	"	10 "		600	——	1926
H'o Sheng	(合　盛)	"	10 "		700	——	1892

In Chekiang the principal material used for making wine is glutinous rice, while for making samshu people use either glutinous rice, kaoliang, wheat, small green beans, or maize, while soy is made from soya beans, flour, and salt. As Chekiang produces quite large quantities of glutinous rice, wine is made in almost every district but since the wine industry is growing, rice is obtained from Chintan, Liyang, Tanyang, and Wusih in Kiangsu, not only to meet the demand but to give better quality. Although kaoliang, wheat, green beans, and maize are grown locally, samshu manufacturers in Hanghsien, Pinghu, Chiashan, Chiahsing, Haining, Tunghsiang, Wuhsing, Tehtsing, Shaohsing, Tunglu, Fenshui, Chienteh, Shunan, Pingyang, Chuhsien and Kaihua buy large quantities of kaoliang from Shanghai in addition to local supplies. It is generally recognized that kaoliang from districts north of the Yangtse in Kiangsu and from the central part of Shantung are most suitable for making samshu. Soya beans and flour for making soy are generally bought locally, while salt is obtained from the eastern coast of the province. *Chiu chu* (酒麯) or liquor base made in Shaohsing, Ningpo, Yungchia, Chuhsien, Chienteh, Hangchow in large quantities, but sometimes brewing houses made their own *chiu chu*. There are two varieties of *chiu yao* (酒藥) or wine medicine the black coming from Fuyang and having strong fermenting power, and the white from Ningpo, which is weaker but imparts a more fragrant flavour to the wine. In the following list is given the approximate prices per picul of the materials used for making wine and soy:—

	Lowest	Highest
Glutinous rice	$7.00	$12.00
Kaoliang	4.40	7.00
Wheat	4.00	7.00
Small green beans	7.00	10.00
Maize	4.00	5.50
Soya beans	6.00	9.00
Flour	9.00	12.00
Salt	—	About 11.00
Chiu chu	7.00	10.00
Chiu yao		20 per 100 catties.
Glutinous rice grain	—	About $8.00

The method of making rice wine is very similar in principal details in different places. The following are two ways of making Shaohsing wine.

Rinsing method.—Glutinous rice, after having been soaked in water for 24 hours and steamed, is rinsed several times to bring down the temperature to about 32 degrees C. and then poured into jars, into which a little yeast powder, known as *chiu yao* has been placed. Afterwards more yeast powder is added (from 5 to 6 taels according to the temperature of the season and of the rice) and the jar is then closed and wrapped in straw in order to keep the contents at an even temperature. From 24 to 48 hours later mixture of about 3.5 *tou* (斗) of powdered distilled grain and 3/7 of water in which the glutinous rice has been soaked and 4/7 of plain water is put in the jar, the total amount of this mixture being equal to the weight of glutinous rice used. As a rule in each jar contains from 1¼ to 1½ *shih* of rice. The jar is again covered and left for another 24 hours, when the mass is stirred several times in order to secure even fermentation. As the intervals between stirring have a great effect on the quality of the wine, experts are employed to take charge of this operation. About 70 days after the first stirring the liquor is drawn off, left to settle, and is then bottled.

Spreading method.—For every jar of wine required from 1½ to 2 *shih* of glutinous rice is used, according to the strength desired. If local grown rice is used, it is soaked in water for 20 days, but if rice from Wusih and Tanyang, is used, soaking for 15 days is sufficient. The weather has also something to do with the length of this period. The rice is then steamed for about 30 minutes and then spread on mats to cool down to about 60 degrees C. This temperature is modified according to conditions, a higher temperature being desirable in cold weather and a lower one in warm weather. Into the jar wherein the mass is to be put *shui tsiang* (水漿) on rice juice is poured in suitable proportions, and after the rice has been put into

the jar nine catties of *chiu niang* (酒娘) or "mother liquor," together with from three to four tou of *chiu chu* (酒麴) or liquor base, are thoroughly stirred until the temperature is brought down to 32 degrees C. When the jar is covered with straw and left to ferment for from 12 to 24 hours. Six to ten hours after the first stirring a second stirring takes place. The two stirrings form a very important step in the process, for the quality of the wine is usually determined by the skill with which the stirring is carried out. After being left for about 70 days for complete fermentation the mass is put into silk bags, which are pressed until all the liquor is extracted. The sediment left in the bags is used for preparing samshu, while the wine thus made, known either as *hsin chiu* (新酒) or "new" wine or *pai chiu* (白酒) or "white" wine, cannot be kept for any time unless boiled. Wine so prepared varies in colour from white and yellow to sherry colour, according to the ingredients used; a brown tint is often imparted by using brown sugar.

The chief ingredient for making samshu is kaoliang, wheat, or maize. Samshu is made by first washing and soaking the grain for 24 hours, which is then steamed and spread on a mixture of mud and corn-husks so that the moisture contained therein can be absorbed and the temperature preserved. After *chiu yao* (酒藥), or "wine medicine", 1½ catty for each picul, has been mixed in the proportion of the grain is heaped up, covered with straw, and stirred every 6 or 7 hours. Fermentation takes place in about 24 hours, when the grain is put into a jar, sealed air-tight, and left for 6 or 8 days before being distilled.

If the sediment obtained after Shaohsing wine has been pressed out is used for making samshu, the process is much simpler. All that has to be done is to put the sediment into a jar and seal it for two or three months before distilling, no *chiu yao* being added. Samshu made from kaoliang, wheat, or maize is known as *tu shao* or native samshu, while that made from the sediment mentioned above is called *ts'ao shao* or "sediment" samshu.

The chemical properties of the water used in making wine has a very close bearing on the quality of the product. Although the high reputation of Shaohsing wine may be due partly to the elaborate method of brewing, the suitability the water used accounts for the high quality of the product to quite a large extent. The water used by the Shaohsing brewers is taken from Chien Hu (鑑湖) and is known as Shan Yin Shui (山陰水), its specified gravity being higher than that of ordinary water. Analysis of Shan Yin Shui gives the chemical composition as follows:—

	Acidity	Hardness	Chlorine Compounds per million	Phosphorus Compounds	Iron	Nitrogen Compound
Tsing Tien Hu (青田湖)	Medium	2.6	Trace	Trace	None	Trace
Kui Chi (會稽)	„	2.3	0.02	None	„	„
Yang Pin (楊濱)	„	2.1	0.01	„	„	„
Lu Chia Chuang (潞家莊)	„	2.6	0.3	„	„	„
Lin Tou (林頭)	„	2.6	—	„	„	„
Ta Hua (大化)	„	2.7	Trace	„	„	„
Tsing Tien Hu (青田湖)	„	3.3	0.6	„	„	„

The recipe for making wine varies with different brewing houses, but the following are the proportions used in making Shaohsing wine by the Chang Tung Ming:—

Rice (Shih)	Tsiang Shui (Picul)	Plain Water (Picul)	Chiu Chu (Tou)	Market
1.90	1.50	2.0	4.2	Tientsin
2.00	1.00	2.0	4.2	„
1.90	1.25	2.5	4.2	Hangchow
1.75	1.00	2.5	4.2	Shanghai

In making soy, a quantity of soya beans, after being soaked in water for several hours, are steamed for about

10 hours. The beans are then mixed with flour in the proportion of 70 catties of flour to 1 *shih* of beans, and left to ferment for about ten days, when salt solution is added (80 catties of salt in 200 catties of water for every *shih* of beans) and the mixture exposed to the air and stirred once a day. When the bean become brownish in colour the mixture is known as *tsiang liao* (醬醪), and is mixed with a solution of 20 catties of salt in 100 catties of water, and heated either over a small fire or in the sun, and after straining through cloth bags becomes soy. The liquor thus obtained is known as *mu yu* (母油) or "mother" soy, to which may be added *tsiang liao*, 100 catties of the former to 70 catties of the latter, and pressed to make *tao yu* (套油). To make a lower grade of soy, known as *shuang tao* (雙套) and *san tao* (三套), *tao yu* is usually mixed with *tsiang liao* and pressed. The residue left after *mu yu* is made is mixed with water and salt and pressed to extract soy of much inferior quality, the residue being sold to farmers as fertilizer. When soy is dried in the sun during summer and loses 30 per cent of its volume by evaporation, a certain germicidal powder is added and the mixture sold under the name of *fu yu* (伏油) or "healthy" soy.

Vinegar is made from rice wine of inferior quality, and when the desired acidity is obtained a little brown sugar is added to darken the colour.

As the amount of rice used for making one jar of wine varies considerably, so the wine output ranges from 400 catties in Ninghsien and Fenghua to 650 catties in Lanchi and Chinhua. In regard to samshu, 100 catties of kaoliang gives from 37 to 39 catties, a similar amount of wheat or maize gives about 48 catties, and every 100 catties of rice wine sediment yields 12 catties of samshu. Although the output of soy varies with the quality, it may be generally assumed that 32 catties of soya beans, 79 catties of flour, and 49 catties of salt will yield 100 catties of soy.

The following table shows the output of various descriptions of wine from different districts, their markets, and marketing condition:—

ANNUAL OUTPUT
(in catties)

	Huang Chiu	Ts'ao Shao	Pai Chiu	T'u Shao	Shaohsing Wine	Total	Market	Busy Season
Hanghsien	9,199,125	163,540	192,600	67,750	—	9,623,015	Local	—
Haining	2,469,000	39,504	—	233,000	—	2,741,504	„	—
Yuhang	875,250	15,560	—	—	—	890,810	„	—
Linan	283,500	4,536	—	—	—	288,036	„	—
Yütsien	159,500	2,320	—	10,000	—	171,820	„	—
Fuyang	833,000	13,328	—	29,500	—	875,828	„	—
Hsinteng	391,000	6,256	—	57,500	—	454,756	„	—
Chiahsing	1,679,500	36,840	—	672,000	—	2,388,340	Local Hangchow, Chinhua	September-December
Chiashan	816,500	16,716	—	841,000	—	1,674,216	Local	—
Pinghu	404,500	8,448	—	463,000	—	875,948	„	—
Tsungteh	391,000	8,508	—	76,500	—	476,008	„	—
Tunghsiang	815,000	18,864	—	157,500	—	991,364	Hangchow Local	—
Haiyen	407,500	9,000	—	—	—	416,500	Local	September-December
Wuhsing	3,685,050	114,646	339,300	101,500	—	4,250,496	„	„
Changhsing	489,600	15,232	—	—	—	504,832	„	„
Wukang	78,300	2,436	—	—	—	80,736	„	„
Tehtsing	1,048,500	122,620	149,400	35,000	—	1,355,520	„	„
Anchi	262,350	8,162	—	3,500	—	274,012	„	„
Hsiaofeng	296,100	9,212	—	28,500	—	333,812	„	„

	Huang Chiu	Te'ao Shao	Pai Chiu	T'u Shao	Shaohsing Wine	Total	Market	Busy Season
Ninghsien	3,800,000	—	—	—	—	5,800,000	Local Szechuen, Fukien, Ningpo.	—
Tsuchi	1,044,400	—	—	—	—	1,044,400	Local	—
Fenghua	1,136,000	—	—	—	—	1,136,000	„	—
Chinghai	2,792,000	—	—	—	—	2,792,000	„	—
Tinghai	1,967,200	—	—	—	—	1,967,200	„	—
Hsiangshan	600,000	—	—	—	—	600,000	„	—
Nantien	672,000	—	—	—	—	672,000	„	—
Shaohsing	—	30,000	—	70,000	43,000,000	43,100,000	Chekiang, Kiangsu, Shantung, Heilungkiang, Kuangtung Strait Settlements, Honan, Philippines Harbin Nangpo.	March-May Summer Winter
Hsiaoshan	—	—	—	4,000	1,050,000	1,054,000	Local Same as Shaohsing	Summer
Chuchi	590,000	—	—	—	—	590,000	Local	„
Yuyao	4,021,501	10,000	—	—	—	4,031,500	„	„
Shangyu	1,900,000	8,000	—	—	—	1,908,000	Local Hangchow, Shanghai.	„

	Huang Chin	Ts'ao Shao	Pai Chin	T'u Shao	Shaohsing Wine	Total	Market	Busy Season
Chenghsien	1,275,000	—	—	—	—	1,275,000	"	"
Hsinchang	455,000	—	—	—	—	455,000	"	"
Linhai	1,500,000	14,000	5,000	—	—	1,519,000	"	—
Huangyen	800,000	5,000	—	—	—	805,000	"	—
Wenling	250,000	2,500	20,000	—	—	272,500	"	—
Ninghai	500,000	3,500	—	—	—	503,500	"	—
Tientai	600,000	3,500	—	—	—	603,500	Local	—
Hsienchu	60,000	500	80,000	—	—	140,500	"	—
Lanchi	825,000	—	—	22,500	—	847,500	"	Spring Summer Winter
Chinhua	745,000	—	—	—	—	745,000	"	Spring Winter
Iwu	455,000	—	—	4,000	—	459,000	"	Spring Summer Winter
Tunglu	125,000	—	—	52,000	—	167,000	"	"
Fenshui	73,000	—	—	28,000	—	101,000	"	"
Chienteh	45,000	—	—	58,000	—	103,000	"	"
Tangchi	137,000	—	—	—	—	137,000	"	"
Shunan	72,000	—	—	65,000	—	137,000	"	"
Shuian	58,000	—	—	23,000	—	81,000	"	"
Shouchang	146,000	—	—	17,000	—	163,000	"	"
Tungyang	327,000	—	—	—	—	327,000	"	"
Yungkang	287,000	—	—	—	—	287,000	"	"
Wui	290,000	—	—	—	—	290,000	"	"

	Huang Chiu	Ts'ao Shao	Pai Chiu	T'u Shao	Shaohsing Wine	Total	Market	Busy Season
Pukiang	70,000	——	——	10,000	——	80,000	,,	,,
Yungchia	1,765,000	54,700	——	——	——	1,819,700	,,	September-April
Juian	435,000	69,600	——	——	——	504,600	,,	,,
Pingyang	250,000	5,000	——	85,000	——	340,000	,,	,,
Lotsing	365,000	7,000	——	——	——	372,000	,,	,,
Yühuan	350,000	7,000	——	——	——	357,000	,,	,,
Taishun	18,500	300	——	——	——	18,800	,,	,,
Lishui	142,500	4,500	——	——	——	147,000	,,	October-December
Sungyang	61,600	4,250	——	——	——	65,850	,,	,,
Tsingtien	91,100	3,550	——	——	——	94,650	,,	,,
Lungchüan	148,740	——	——	——	——	148,740	,,	,,
Chingning	11,700	——	——	——	——	11,700	,,	,,
Chingyüan	32,700	1,100	——	——	——	33,800	,,	,,
Tsingyün	71,500	1,380	——	——	——	72,880	,,	,,
Yünhuo	37,560	3,580	——	——	——	41,140	,,	,,
Suichang	108,400	2,480	——	——	——	110,880	,,	,,
Hsüanping	10,067	1,420	——	——	——	11,487	,,	,,
Chuhsien	1,057,600	——	——	60,800	——	1,118,400	,,	,,
Lungyu	124,910	——	——	6,800	——	231,810	,,	——
Kiangshan	215,160	——	——	——	——	215,160	,,	——
Changshan	225,220	——	——	6,700	——	232,030	,,	——
Kaihua	7,920	——	——	67,400	——	75,320	,,	——
Changhua	——	——	——	——	——	——	,,	——
Total	59,822,662	858,588	786,300	3,356,430	44,050,000	108,874,000	,,	——

Shaohsing wine merchants are known as *ching chuang* (京莊) or *sui chuang* (隨莊), the former dealing in wine for outside markets and the latter handling the local business. In order to extend the sphere of business Shaohsing wine-makers used to make the liquor supplied to *ching chuang* of better quality than that supplied *suichuang* by using an additional 30 catties of glutinous rice and 10 catties of *chiu chu* for every jar of wine. Four sizes of jars are used in the trade; those containing 50 catties are known as *chiata* (加大), jars of 30 catties are *hsingshih* (行使), 16 catties *fangyang* (放樣), and 10 catties *ching-chuan* (京莊).

Shaohsing wine is shipped to neighbouring districts by sailing boats, but is forwarded by steamer and train to places outside the province. According to the Chekiang Tobacco and Wine Tax Bureau, over 25,860,000 catties (60 per cent of the output) from Shaohsing are shipped annually and about 320,000 catties (30 per cent of the local production) from Hsiaoshan. Most of the soy made in Chekiang is consumed locally, but supplies from Pinghu, Yuyao, Hangchow, etc. are occasionally shipped to Shanghai and various districts in Hangchow, Chiahsing, and Huchow prefectures. Soy is generally put up in porcelain vessels of 7 different sizes, *yinshao* (印紹), containing 35 catties, *tachungtan* (大中罈), 15 catties, *hsiaochungtan* (小中罈), 10 catties, *fangtan* (放罈), 10 catties, *hsiaotan* (小罈), 5 catties, *shihtan* (石罈), 3 catties, and *kuang p'ing* (光瓶), 3 catties. Soy is carried within a distance of 200 *li* by sailing boats at 2 cents per small jar, 5 cents for middle sizes, and 10 cents for a big jar.

The price of wine is highest at Ningpo and Huchow, where rice wine is sold at an average of $11 per 100 catties and *chao shao* at about $19, in Shaohsing rice wine sells at about $7.50 per 100 catties, and *chao shao* and *tu shao* at $10; in Hangchow, Chiahsing, Chinhua, Yenchow, and Wenchow the average price for rice wine is about $4.50 per 100 catties and of *tu shao* about $10, while in Chuchow, where liquor in cheapest, rice wine sells at $4 per 100 catties and samshu at $8.

As the length of time rice wine is stored determines to a very large extent the quality of the liquor, jars are frequently marked with the date of manufacture. Prices range from $1.60 to $27 per jar according to the age and quality of the wine. The best soy is sold at 30 cents a catty, and the lowest grade at 5 cents.

No "jar tax" is levied on *chao shao*, but on every jar of 500 catties of *tu shao* and rice wine is collected 20 cents as certificate fee or *kang chao* (缸照費) 50 cents stamp tax on 100 catties of rice wine and 88 cents on samshu, 60 cents on rice wine and $1.20 on samshu for *kung mai* or "monopoly" fee, and 10 cents provincial surtax for rice wine and 17½ cents for samshu. A special rate is levied on Shaohsing wine in addition to the 20 cents certificate fee, 72 cents per jar is levied for stamp tax, regardless of the size of the jar, 80 cents *kung mai* fee, and 14½ cents surtax.

CHAPTER X

TEA-FIRING

ALTHOUGH not so important as Anhui and Fukien as a tea-growing centre, Chekiang turns out a larger quantity of leaf than tea-producing provinces such as Hupeh, Kiangsi, Hunan, etc. The area under tea cultivation is over 522,000 *mou*, distributed over more than 60 districts, with an annual output of about 426,000 piculs.

About the middle of the Tsing Dynasty, when the export of tea from China was increasing, tea-firing plants known as *cha chan* (茶 棧) began to collect from planters unfired tea or *mao cha* (毛 茶). After the first plant was established at Ping-shui (平 水), others were opened in Shangyu, Chuchi, Chenghsien, and Yungchia, and by 1896 there were 9 plants in Yungchia and 16 in Shaohsing. In 1899 the domestic price of unfired tea was very high but low prices were ruling in foreign markets, so that the firing plants sustained heavy losses and business, as a whole, experienced a tremendous slump. A revival was not seen until 1908, when prices were pushed up by a demand for China tea in foreign markets. Another period of depression followed the outbreak of the Great War in 1914, and since then tea-firing in Chekiang has made very little progress.

There are 10 establishment at Changchen (章 鎮), Shangyu, 16 at Pingshui, Shaohsing, 19 at Yungchia, 6 at Chenghsien, 8 at Chuchi, and 4 or 5 each at Yuyao, Shunan, Suian, Hsinchang, Fenghua, Chinghai, and Kaihua. These plants open a few days before *ku yu* or "crop rain" (穀 雨) (April 21) and remain in operation for a period of about five months. They are usually organized by partners with capital ranging from a few thousand dollars to $30,000.

The tea-growing area in Chekiang overs more than 60 districts; in fact, with the exception of Haining, Hsinteng, Chiahsing, Chiashan, Haiyen, Chungteh, Pinghu, Tunghsiang, Hsiangshan, Nantien, Lungyu, and Tinghai, in every district a certain amount of tea is grown. The following table shows the output of leaf in various districts:

	Piculs		Piculs
Shaohsing	120,000	Juian	1,240
Fuyang	42,500	Sungyang	2,200
Yuhang	39,800	Lanchi	520
Hangchow		Changhua	850
Municipality .	574	Chühsien	410
Hanghsien ...	5,200	Yühuan	398
Linan	8,100	Chingning ...	300
Chuchi	10,000	Tzuchi	1,244
Yuyao	10,000	Fenghua	2,200
Chenghsien ..	21,600	Chinghai	3,080
Hsinchang ...	12,000	Wui	2,000
Wenling	32,000	Pukiang	4,875
P'ingyang	10,900	Kiangshan ...	3,044
Fenshui	3,800	Shangyu	3,000
Tsingyun	5,300	Linhai	5,460
Süanping	1,000	Tientai	1,588
Huangyen	650	Hsienchü	3,000
Tangchi	140	Chinhwa	2,000
Lotsing	650	Tungyang	5,500
Yunho	180	Taishun	3,000
Yutsien	2,000	Lungchuan ...	4,500
Changhsing ..	2,900	Wuhsing	500
Wukang	2,000	Iwu	500
Anchi	1,900	Shouchang ...	460
Hsiaofeng	8,000	Lishui	100
Ninghsien	950		

Before being sent to the firing plants, leaf is made into "crude" tea by planters, and is subsequently fired again either by hand or machinery. Green tea made by hand has to undergo three periods of firing—the first is stopped when the leaves become sticky, the second being done after the leaves get cool from the first firing and the stalks and any foreign matter removed. As soon as the leaves turn slightly black during the second firing, the temperature is reduced, but stirring and mixing continues until the tea dries completeley. If the weather is fine and warm enough, instead of the first and second firings planters making green tea dry the leaves in the sun, but although this may save time and labour, the quality of the leaf is greatly affected. *Hsiang cha* (箱 茶) or box tea is made in a slightly different way. During the firing a little thin rice-paste is sprayed over the tea until the leaves form into lumps, when the mass is sifted through

sieves of six different meshes and sorted before being heated again in flat pans, stirred, and mixed with a little oil or wax in order to impart lustre to the tea. Before being packed leaf has to be scattered and stirred in a cold pan again, and any impure matter such as sand, etc. removed.

Instead of firing by hand green tea is sometimes made in rotating cylinders driven by electricity. After being fired for an hour and a half or two hours the tea is sifted and put into a wind-box to blow off the dust and small leaves before the stalks and seeds are removed by woman workers. To remove any moisture which may be still left, the tea is fired again before being packed.

Black tea is not so important a product in Chekiang as green tea. It is made by first drying the leaf in the sun and stirring frequently for about three hours until the leaves become soft and appear to be withered. Then it is pressed in boxes about two inches deep for one or two hours to start fermentation. When the leaves begin to turn brown and give off a fragrant odour they are dried in the sun and fired in an iron pan, and before becoming cold, and fired again they are rubbed between the hands. Teas made in this way are largely consumed on the domestic market, and very few firing plants in Chekiang make tea by this method.

Tea is given a name either from it colour or shape. By colour tea is classified in two categories, black and green. In Chekiang there are 18 districts producing black tea, with an annual output of 56,646 piculs, and 63 districts making green tea, the annual output being 368,696 piculs. When named according to shape tea is known as *ch'i cha* or "flag" tea (旗 茶), or *yuan cha* or "round" tea (圓 茶). *Ch'i cha* is again classified into *i ch'i i ch'iang*, (一旗一枪) or "one flag and one spear" and *i ch'i liang ch'iang*, (一旗二枪) or "one flag and two spears" according to the number of sprouts and leaves, while *yuan cha* is again divided into *ts'an* or "silkworm", (蠶) *mei* or "eyebrow", (眉) *mu* or "eye" (目), *chu* or "pearl" (珠) and *hsia* or "shrimp", (蝦), each according to its fancied resemblance. Tea is also named after the place of its production and time of picking, such as Lungching (龍 井) and Pingshui

(平 水), and tea picked before *ku yu* (穀 雨) or "crop rain" is called *yu chien* or "before rain" (雨 前), and that picked in early spring is known as *hsi chun*, or "bright spring" (熙 春).

The price of "round" tea varies so much that the difference may be several scores of dollars. The following table shows some of the ruling prices of "round" tea during 1933:—

	Per 100 Catties		
	Highest (Taels)	Lowest (Taels)	Common (Taels)
Ting Tsan (頂 貢)	110	95	105
Cheng Ts'an (正 貢)	100	80	90
San Ts'an (三 貢)	90	70	78
Chên Mei (珍 眉)	57	43	50
Fêng Mei (風 眉)	50	35	42
É Mei (蛾 眉)	46	32	39
Chen Mei (針 眉)	40	30	37
Hsiu Mei (秀 眉)	32	22	29
Ts'an Mu (貢 目)	46	30	38
I Mu (蟻 目)	34	25	30
Ying Mu (蠅 目)	25	19	22
Ho Mu (禾 目)	20	14	16
Chen Chu (珍 珠)	30	20	25
Ma Chu (蔴 珠)	24	18	20
Pao Chu (寶 珠)	24	18	21
Yuan Chu (圓 珠)	22	16	20
Hsi Chu (熙 珠)	20	14	17
Cheng Hsia (正 蝦)	40	28	30
Fu Hsia (副 蝦)	30	24	26
Tou Yuan (頭 圓)	40	30	35
Erh Yuan (二 圓)	35	25	30
San Yuan (三 圓)	30	24	26

According to the investigations of the Bureau of Foreign Trade the output of "box" tea from in various districts in Chekiang is as follows:—

Shangyu ...	$1,115,000	Chenghsien ..	$240,000
Shaohsing ..	324,500	Hsinchang .	120,000
Chuchi	120,000	Fenghua ...	60,000
Yungchia ..	771,260	Chenhai	60,000
Suian	510,000	Kaihua	52,800
Shunan	100,000	Yuyao	155,000
Total	$3,628,560		

"Box" tea from Chekiang finds a good market abroad, being exported from Shanghai, and is very carefully packed—first in a tin-lined box, over which another box is made, then a covering of dried bamboo leaves, and finally as an outercovering a bamboo basket. The boxes used are of four sizes, the smallest (7½ cubic inches), being known as "one five" or *i wu* (一五), the next size, 1¾ cubic feet, is "two five" or *erh wu* (二五), the next 1.85 cubic feet, 'three seven" or *san ch'i* (三七), and the largest, 2 cubic feet "large square" or *ta fang* (大方). Although the size of the box used is the same, different grades of tea have different weight, owing to the fact that high-grade leaf is of fine texture and weighs heavy, while low-grade tea is more coarse and is lighter in weight. The following table shows the weight of different grades of tea in different size boxes:—

	Box	Pounds
Ting ts'an	Erh pa (二八)	90
" "	I wu	90
Cheng ts'an	Erh pa	68
San ts'an	"	54
Chung mu (中目)	San ch'i	40
Cheng hsia	"	30
Fu hsia	"	25
Hu mu	Ta fang	20
Ma chu	"	24
Tow yuan	San ch'i	44
Erh yuan	"	38
San yuan	"	30
Chen mei	"	60
Chen yu (正雨)	"	40
San yu (三雨)	Ta fang	30

"Box" tea from Shangyu, Shaohsing, and Chenghsien is sent to Pokuan (百官), and thence taken to Ningpo by train and shipped to Shanghai. Transportation from Changchen, Shangyu, to Pokuan is by sailing-boats, each carrying approximately 350 boxes for about $10, while tea from Pingshui, Shaohsing, is taken to Putou (埠頭) by raft and forwarded to Pokuan by sailing-boats, the freight by raft being 5 cents per box and by sailing boat about 25 cents. Tea from Chenghsien is transported to Sanchu-

tou (三渚頭) by raft at 14 cents per box and shipped to Pokuan along the Ts'ao-E river at about 20 cents per box. Fenghua tea is sent to Tachiao (大橋) from Chikou (溪口) by raft, thence going to Ningpo either by steamer at 30 cents per box or by motor-truck at $3 per 1,000 catties. Tea from Chuchi, Juian, Shunan and Kaihua is sent to Shanghai by train from Hangchow, while Yungchia and Chenhai "box" tea is shipped direct to Shanghai.

Chekiang "box" tea is shipped largely to Great Britain, the United States, France, Germany, Straits Settlements, Hongkong, etc. the 70 per cent being exported from Shanghai and 30 per cent from Ningpo or Wenchow. According to reports by merchants, about $1,450,000 worth of "box" tea is exported to Hongkong annually, $760,000 to Great Britain, over $1,100,000 to the United States, and over $100,000 each to Germany, France, and the Straits Settlements.

There is no direct dealing between firing plants in Chekiang and importers abroad and foreign exporters in Shanghai. The firers usually first send sample boxes to tea-firers in Shanghai, who send out brokers with "small" samples to solicit orders. When the price is settled "large" samples are sent for checking, and if the "small" and "large" samples agree notification will be sent to the Chekiang firing-plants requesting delivery of a consignment. Payment is made about ten days later to the Shanghai plants, which, when handling over the money to the Chekiang firers, deduct 2 per cent as commission. Freight from Chekiang to Shanghai is paid by the seller.

CHAPTER XI

SUGAR INDUSTRY

THE MANUFACTURE of sugar in China dates back more than a thousand years. From the Tang Dynasty to the end of the 19th century sugar boiling as a household industry flourished in Szechuen, Fukien, Kuangtung, Kuangsi and Chekiang, and China was self-supplying in this important foodstuff. During the last years of the monarchy, however, sugar from Java, and Japan began to secure a hold on the Chinese market and as a result the home industry dwindled to insignificance. Since the establishment of the Republic, though several proposals have been made to develop the sugar manufacturing industry in Chekiang, little has been accomplished along this line. Sugar boiling in Chekiang is still largely a household industry, and only a few modern factories, whose operations are limited to the manufacture of candy sugar, have been established in the Province.

P'ingyang, Yungchia, Shuian, Iwu and Yungk'ang in the south, and Juian and Ch'angshan in the west are the principal sugar producing centres of the Province, as in all these districts sugar cane and *t'ang keng* (糖 梗), a local variety of cane not edible while fresh, are abundant. There are about 300 families in P'ingyang engaged in sugar boiling, with 100 in Yungchia, 120 in Shuian, 200 in Iwu, 30 in Yungkang, 400 in Juian and 170 in Changshan. The capital employed by each family is small, amounting to only a few hundred dollars. The season begins at the end of November and terminates in the middle of April. Products consist chiefly of brown sugar, the output of each household ranging from about 20 to 100 piculs a year.

The most important part of the equipment is the mill, which consists of two cylindical stones about 2 feet in diameter and 1½ feet in height, and operated by two or four oxen. The liquor extracted from the crushed cane is boiled in vats, and very little other plant is needed.

There are seven factories in the Province, engaged in the manufacture of candy sugar, two in Hangchow, three in Lanch'i and one each in Chinhua and Yungchia. Details of these concerns are as follows:

Ho Feng Factory (和豐冰糖廠), Hangchow.—This is situated near Zakow railway-station, facing Chientang River, and was started with a capital of $16,000. The most importnt part of the factory is the drying-room, where the candy is dried by steam-heat. This room has thick brick walls, the surfaces of which are lined with asbestos. Three openings, equipped with electric fans, are made in the ceiling, one being used to admit hot air and the other two to let in cold air when it is desired to reduce the heat of the room. Usually the temperature is kept at from 140° to 160° F. and there is space for drying 15 piculs of candy sugar at one time. The boiling is done in a large cauldron heated by steam, while crystallization takes place in lead barrels, of which the factory has 2,000.

Wu Lin Factory (武林冰糖廠), Hangchow.—This establishment is situated at Hua Hsien Chiao (化仙橋), and has a capital of $10,000. The factory has 1,600 lead barrels for crystallization.

Chung Ho Sheng Factory (中和升冰糖廠), Lanch'i.—Situated at Yin Chun Hsiang (迎春巷), this factory was established in 1922 with a capital of $20,000. The native method is employed in making candy sugar, and preserved oranges are also made as a by-product. The annual output of candy sugar is about 2,000 piculs. About 30 workers are employed, with wages ranging from $5 to $30 per month.

Ta Yu Heng Factory (大有恆冰糖廠), Lanch'i.—The concern is situated at Chien Pei Chieh (前北街), and has a capital of only $2,000.

Mao Chu Hsing Factory (毛聚興冰糖廠), Lanch'i.—This is a very small concern, with very modest capital and equipment.

Chung Hua Factory (中華冰糖廠), Yungchia.—Established in 1927 with a capital of $5,200, this factory, is situated in the south of the city. It is equipped with

a drying room, a boiling cauldron, and a member of lead barrels. Refining machinery has been installed for making brown and white sugar, and 34 workers, receiving from $5 to $20 monthly, are employed.

Kung Ta Hsia Factory (公大洽糖廠), Chinhua.— This factory has a capital of $6,000, producing candy sugar and preserved oranges.

Sugar cane and *t'ang keng* are grown in the southern districts of Chekiang, P'ingyang being the principal sugar cane growing centre and Juian that of *tang keng*. The output of the producing districts is shown in the following table:—

SUGAR CANE

	Piculs
P'ingyang	150,000
Yungchia	41,600

T'ANG KENG

	Piculs
Juian	600,000
Shuian	100,000
Yungk'ang	12,000
Ch'angshan	90,000
Iwu	100,000

About a million piculs of sugar cane and *tang keng* are consumed annually in making sugar.

Imported refined sugar of Dutch standard No. 25 and G48 and brown sugar from Fukien are used in making candy sugar. Dutch supplies are bought from importers in Shanghai at about $10 per picul, while Fukien sugar is purchased from that province at $14. About 10,000 piculs of these sugars are used annually by the candy sugar factories of Chekiang.

The season opens in November, when ripe sugar cane or *t'ang keng* is ground in the stone mills. The sap thus

obtained is boiled in a cauldron, and when the liquid turns red a little lime is added to remove some of the impurities. The water content of the sap is evaporated by boiling until very little moisture remains and the mixture becomes sticky, when it is poured into wooden containers where it crystallises into brown sugar. This sugar, however, still contains a considerable proportion of impurities, and must be further refined before white sugar can be obtained.

The process of manufacturing candy sugar is also very simple. A mixture of 98 parts of imported sugar and two of Fukien sugar is dissolved in boiling water, and the syrup thus formed is stirred until it becomes transparent and very sticky. When its consistency has reached the desired point and the temperature has risen to 120° the mixture is kept boiling for another twenty minutes, and is then poured into lead barrels and put in a cool place for a week. In each barrel from four to eight sticks of bamboo are placed, and around these sticks the syrup begins to crystallize. The candy sugar is then taken out and left in the drying room for 24 hours, the uncrystallized portion remaining at the bottom of the barrel being boiled again, this process being repeated three times.

The candy sugar obtained from the first crystallization is called *t'ou hao ping* (頭號冰), or first grade candy sugar, the second is *er hao ping* (二號冰), or second grade, and the third is *san hao ping* (三號冰), or third grade candy sugar. The liquor left in the barrel after the third crystallization cannot be used for candy sugar again, but is made into white or brown sugar. In manufacturing candy sugar, a picul of raw sugar produces a picul of the refined product, there being no waste in the process. The first crystallization yields about 30 catties of candy sugar, the second yields 20 catties, while after the third boiling 20 catties of candy sugar and 30 catties of white or brown sugar are obtained.

The annual sugar output of Chekiang amounts to approximately 109,360 piculs, and that of candy sugar about 10,680 piculs. Details are shown in the following table:

BROWN SUGAR

	No. of Families in Industry	Total Output (piculs)
P'ingyang	300	15,000
Yungchia	100	4,160
Shuian	120	10,000
Iwu	200	10,000
Yungk'ang	30	1,200
Juian	400	60,000
Ch'angshan	170	9,000

CANDY SUGAR

	No. of Factories	Total Output (piculs)
Hangchow	2	7,000
Lanch'i	3	3,000
Yungchia	1	500
Chinhua	1	180

Several grades of sugar are produced in P'ingyang, known as *hung t'ang* (紅 糖), *kung fen* (宮 粉) *kung fen* (貢 粉) and *pan t'ang* (板 糖), while the product of Shuian, Iwu, Yungk'ang, Juian and Ch'angshan is known as *hung t'ang*. *Kung fen* is sold at about $14 per picul, *pan t'ang*, at $12 or $13, and *hung t'ang*, at $12. Candy sugar is usually classified into first, second and third grades, in addition to "dust", or small broken piece. The prices for the three grades are $22, $20 and $18 respectively, and "dust" is sold at $14 a picul, while the white or brown sugars produced as by-products fetch about $14 or $15 per picul.

PRINCIPAL MARKETS

The bulk of the sugar prdouced in Chekiang is consumed locally, and though some producing centres sell to neighboring districts, no export is made outside the province. About 10,000 piculs of sugar from P'ingyang are absorbed annually by Yungchia and about 7,000 piculs are sold to Lanch'i, Chinhua and Hangchow. Kaihu and Shouchang buy 6,700 piculs of sugar from Shuian. Most of the candy sugar produced in Chekiang Province is consumed

in the districts where the factories are situated, but the Ho Feng factory sells some of its output in Shaohsing, Chinhua, Chienteh, and Chühsien, and the Chung Hua Factory supplies the districts formerly included in the prefectures of Wenchow and Taichow.

Candy sugar is packed in two ways—the *kuang pao* (廣包) containing about 80 catties of candy sugar in lumps or flakes, and *ma tai* (麻袋), containing 160 catties of candy sugar "dust." Brown sugar is always packed in gunny bags of 150 catties.

The families engaged in the sugar industry usually sell their products direct to customers, but in Yungchia a sugar *hong* is established which handles supplies from P'ingyang, Juian and local producers.

CHAPTER XII

FLOUR-MILLING

PRIOR to the World War Harbin was the principal milling-centre in China, but later, as flour was in great demand in foreign countries, mills were established in other provinces, particularly in Kiangsu, with Shanghai as the centre. Modern milling in Chekiang began in 1922, when the Ch'ien Ta flour-mill (乾大機器粉廠) started operations, but this concern was quite small, the output being barely enough to meet local demand. Subsequently two other small mills, the Heng Shun (恆順) and Shao Feng (紹豐), were established, and the Li Feng flour mill (立豐粉廠) of Ningpo, now the largest in Chekiang, was not opened until 1931.

Among the flour mills of Chekiang the Li Feng is the best-equipped, and has a capital of $150,000, the resources of other mills ranging from $2,000 to $5,000. In regard to organization, the Li Feng concern is a corporation, while the other three mills are operated as partnerships. The Li Feng mill employs 41 workers, while the number employed at each of the other three mills is less than ten. The Li Feng plant is worked by steam, and has four sets of rollers; the Shao Feng has a Diesel engine and one mill; the Heng Feng also has a Diesel engine and two sets of rollers, while the Chien Ta mill is worked by oxen, no mechanical power being used. The following table shows details of the four flour-mills in Chekiang.

	Location	Established	Organization	Capital	Workers
Li Feng (立豐)	Ninghsien	1931	Corporation	$150,000	41
Shao Feng (紹豐)	Shaohsing	1928	Partnership	5,000	8
Heng Shun (恆順)	Ninghsien	1927	„	3,000	7
Ch'ien Ta (乾大)	„	1922	„	2,000	4

Although Chekiang is a wheat-growing province, the mills usually get their grain from Shanghai on account of the inferior quality of the local product, which is mostly

taken by the small old-style mills operated by farmers. Of the four mills in Chekiang, only the Shao Feng uses local wheat. Wheat from Australia and the United States contains few impurities, and all first-grade flour is made from imported wheat. Wheat from Manchuria is also good, but very little of it comes to Southern markets. The bulk of the wheat purchased by Chekiang millers from Shanghai comes from Tsining (濟 甯), Shantung Province, Soochow and Wusih (無 錫) Kiangsu Province, this grain being good for making second and third-grade flour.

About 50,000 piculs of wheat are taken annually by the Chekiang mills, Li Feng consuming about 38,000 piculs, Shao Feng, 5,600 piculs, and Heng Shun and Chien Ta, 6,000 and 1,500 piculs respectively.

PRODUCTION AND MARKETING

The total annual output of the four mills in Chekiang amounts to about 105,000 bags, of which Li Feng produces 80,000 piculs and Heng Shun 12,000 piculs. In regard to wheat bran, Li Feng produces annually 24,000 bags, Heng Shun 3,600 bags, Shao Feng 3,000 bags, and Chien Ta 900 bags. No first-grade flour is produced by the Chekiang mills, the product of Li Feng being second, third, and fourth grades. Second-grade flour is sold in Shanghai and Hangchow, the third grade goes to soy manufacturers in Yuyao and Choushan (舟 山), while fourth-grade flour is mostly sent to Ningpo, Taichow and Wenchow. The flour produced by the other three mills is very inferior in quality, containing a considerable percentage of bran, the market being limited to Wenchow and Taichow outside the districts where the mills are situated.

Most of the bran from the Chekiang mills is sold to gourmet-powder manufacturers in Shanghai, with a small amount taken by Shanghai poultry-farmers as feed. Locally bran is used to make gluten and to feed fish.

The quantity of flour produced by Chekiang mills is not enough to meet the demand in the province, and considerable quantities both of foreign and Chinese flour are imported annually, particularly from Shanghai, by way of

Hangchow and Ningpo. The following table shows the flour imports into Chekiang during the three years mentioned:—

From	1930		1931		1932	
	Piculs	Hk. Tls.	Piculs	Hk. Tls.	Piculs	Hk. Tls.
Hangchow	3,098	18,844	1,492	7,098	—	—
Ningpo	28,375	129,643	29,533	159,453	9,823	42,704

The larger mills sell flour direct to local merchants or send salesmen to Shanghai to solicit orders. The smaller mills do a considerable amount of business with provision dealers and cereal hongs.

CHAPTER XIII

CANNED GOODS

BAMBOO shoots are abundantly produced in Fenghua, Yuyao, Ninghsien, Chenghsien and Shangyu, all in Chekiang Province, as there are numerous bamboo groves in the mountainous parts of these districts. Prior to 1920 very large quantities of bamboo shoots, dried and fresh, were sent to Shanghai, Hangchow, Shaohsing, and Ningpo, but that year the Ju Sheng Factory (如生筍廠) was established in Ninghsien, turning out several varieties of canned bamboo shoots and mustard plant. As the products of this factory were well received by the public, and the business became very profitable, many other canning factories soon came into existence. In 1928 there were 20 such factories in these districts, all of them doing fairly well, the most important being the Shun Sheng (順生), Heng Hsin (恆新), Min Sheng (民生) and Tien Tai (天台) of Ninghsien, Sheng Sheng (生生), Tien Sheng (天生), Ya Tung (亞東), Shih Sheng (似生), and Ju Hsin (如新) of Fenghua, and Sheng Sheng (勝笙) and Li Min (利民) of Yuyao. Since 1931, however, several of these factories have closed down as a result of the general business depression, though the Ta Lu concern, (大陸), of Ninghsien, actually came into existence during this critical period. The following table shows details of the canned bamboo shoot factories in Chekiang:—

	Locatio	Date of Establishment	Capital	No. of Workers	Value of Total Annual Output	Principal Products
Yu Sheng Factory (如生筍廠)	Ninghsien	1920	$60,000	23 men 400 women	$100,000	Bamboo shoots & mustard plant.
Shen Sheng Factory (順生筍廠)	„	1927	$8,000	6 men 60 women	$40,000	Bamboo shoots & mustard plant.
Heng Hsin Factory (恆新筍廠)	„	1926	$10,000	7 men 70 women	$48,000	Bamboo shoots & mustard plant.
Ho Sheng Factory (和生筍廠)	„	1926	$6,000	5 men 50 women	$35,000	Bamboo shoots & mustard plant.
Ta Lu Factory (大陸罐頭廠)	„	1928	$5,000	3 men 30 women	$12,000	Bamboo Shoots.
Ya Tung Factory (亞東罐頭廠)	„	1932	$8,000	5 men 40 women	$13,000	Bamboo Shoots.
Tsu Sheng Factory (滋生罐頭廠)	„	1930	$4,000	5 men 40 women	$10,000	Bamboo Shoots.
Hua Hsin Factory (華新罐頭筍廠)	„	1930	$1,600	5 men 40 women	$9,000	Bamboo Shoots.
Hsin Yuan Factory (新園罐頭食品廠)	Fenghua	1928	$7,500	20 men 250 women	$70,000	Bamboo shoots, mustard plant, fried gluten, pears, loquat, and beef.

	Location	Date of Establishment	Capital	No. of Workers	Value of Total Annual Output	Principal Products
Sheng Sheng Factory (生生罐頭食品廠)	〃	1924	$8,000	15 men 50 women	$12,860	Bamboo shoots, mustard plant, fried gluten, and jams.
San Hsin Factory (三新罐頭筍廠)	〃	1932	$1,500	6 men 30 women	$19,000	Bamboo shoots & mustard plant.
Ya Tung Canning Factory (亞東罐頭食品廠)	〃	1929	$6,000	190 men, women	$48,000	Bamboo shoots & mustard plant.
Shih Sheng Factory (似生罐頭廠)	〃	1927	$5,000	90 men, women	$19,000	Bamboo shoots & mustard plant.
Ju Sheng 2nd Factory (如生第二廠)	Yuyao	1924	$20,000	16 men 100 women	$34,800	Bamboo shoots, mustard plant and dried cabbage.
Wei I Factory (唯一物產製造廠)	〃	1925	$13,000	12 men 30 women	$10,800	Dried Bamboo shoots and cabbage.
Tao Hua Ta Tung Co. Factory of Amoy, Branch (廈門淘化大同實業公司分廠)	Yungchia	1922	$60,000	—	——	Canned pork, peas, chicken, duck and jams.
Tai Chiu Pao (太久保)	Juian	1921	$20,000	4 men	$4,300	Canned beef, mutton, loquats, straw berries and peaches.

All the factories mentioned in the above table are Chinese enterprises, most of them being worked as partnerships. The canning season begins in March, when the new bamboo shoots come into the market, and after June all factories, except those canning mustard plant, fried gluten and meats, close down. The staff in these factories are engaged for the season at the rate of from $8 to $60 per month. The work of cleaning cans and slicing bamboo shoots is done by women, who receive about 15 cents per day, paid fortnightly.

The larger factories have a certain amount of modern machinery, but in the smaller ones everything is done by hand.

SUPPLIES OF RAW MATERIAL

The chief raw material used is the fresh bamboo shoots which are bought locally, being very abundant in the districts where the factories are situated. The total annual output in the five districts of Fenghua, Ninghsien, Yuyao, Chenhsien and Shangyu amounts to about $1,170,000 in value. There are several varieties of bamboo shoots, but the *lung hsu* (龍鬚) and *mao sun* (毛筍, *Phyllostachys pubescens*), particularly the latter, are the principal varieties taken by these factories. The following table shows the quantity of the bamboo shoots consumed annually by the canning factories of Chekiang:—

	Lung Hsu (Catties)	Mao Sun (Catties)
Ninghsien Factories:		
Ju Sheng (如生).....	1,000,000	250,000
Shun Sheng (順生).....	500,000	400,000
Heng Hsin (恒新).....	400,000	510,000
Ho Sheng (和生).....	410,000	420,000
Ta Lu (大陸).....	30,000	33,000
Ya Tung (亞東).....	36,000	47,000
Tsu Sheng (滋生).....	30,000	40,000
Hua Hsin (華新).....	35,000	40,000
Total	2,441,000	1,740,000
Fenghua Factories:		
Hsin Yuan (華園).....	200,000	250,000
Sheng Sheng(生生).....	90,000	80,000
San Hsin (三新).....	40,000	60,000

	Long Hsu (Catties)	Mao Sun (Catties)
Tien Sheng (天生).....	300,000	320,000
Ya Tung (亞東).....	320,000	310,000
Shih Sheng (恆生).....	200,000	100,000
Total	1,150,000	1,120,000
Yuyao Factories:		
Ju Sheng (如生).....	180,000	90,000
Wei I (唯一).....	——	20,000
Total	180,000	110,000

The price of fresh bamboo shoots fluctuates with the season. In the winter, when the supply is very limited, the price is as high as $20 or $30 per picul, but in spring the price is never more than $10, and in April, when supplies are most abundant, a picul of fresh shoots fetches only two or three dollars. The canning factories make their purchases during this period. The price of the *lung hsu* variety is a little higher than the *mao sun* variety.

Vegetables.—Considerable quantities of mustard plant, and *hsueh li hung* (雪裏紅) (a variety of mustard), are produced in Ninghsien, Fenghua and Yuyao, the last mentioned district being the principal source of supply. About 7,000 piculs of mustard plant are consumed annually by the 10 canning factories, the Ju Sheng Factory, consuming about 3,000 piculs every year, being the largest buyer. The price varies from 1½ to 3 cents per catty.

Hsueh li hung is most abundant in Yuyao, and the Wei I and Ju Sheng factories consume about 240,000 catties annually. The average price is about 80 cents per catty.

Supplies for making dried cabbage and preserved peas came from P'ingyang and Hsichi respectively.

Meat and Poultry.—The Ta Tung Factory, Yungchia, the Sui Yuan Factory at Fenghua, and the Ta Chiu Pao factory, Juian, produce canned beef, chicken, and pork, supplies being bought from Tientai, Yungchia and Juian.

Fruit.—Only the Sui Yuan and Ta Chiu Pao factories turn out canned fruit, and pears, loquats, peaches and Chinese strawberries are bought locally.

The larger factories use cans made from tinplate, and as no tinplate is produced in China, supplies are imported from Great Britain and the United States.

MANUFACTURING AND MARKETING

In preparing canned foods the tins are first cleaned and on being filled are closed except for a small opening left after which they are heated to a very high temperature to sterilise the contents. The holes are then sealed and the cans plunged into boiling water and after cooling labels are affixed and the goods are ready for sale.

The yearly output of canned bamboo shoots in over 2,000,000 tins. The Ju Sheng factory produces about 400,000 tins annually, and the Hsin Yuan, Tien Sheng, Shun Sheng and Heng Hsin come next with an annual output of about 300,000 tins each, while the output of the Ya Tung, Ho Sheng and Ju Sheng Second Factory is about 200,000 tins each. The total output of canned mustard plant is about 300,000 tins, of which the Ju Sheng factory produces about one-third. The Wei I Factory is the largest producer of dried cabbage, producing annually about 30,000 tins, representing nearly 90 per cent of the total product of all factories. About 110,000 tins of canned meat are produced annually, the Ta Tung Factory turning out more than 80,000. In regard to canned fruit the Sheng Sheng, Sui Yuan, and Ta Chiu Pao factories together turn out 12,000 tins of canned pears, peaches, and Chinese strawberries, and about 10,000 tins of jam. The Ta Tung factory produces annually about 43,000 tins of preserved peas.

The principal markets for canned bamboo shoots are Shanghai, Nanking, Hankow, Tientsin and Ningpo, though considerable quantities are exported to the Straits Settlements, Hongkong, and Formosa, as shown by the following table:—

	Tins
Shanghai	760,000
Ningpo	700,000
Hangchow	220,000
Hankow	203,000
Tientsin	195,000
Abroad and other ports	28,000
Total	2,106,000

Canned bamboo shoots are put up either in one-pound or two-pound tins, the price ranging from 18 to 29 cents for one-pound tins and from 22 to 30 cents for two-pound tins. The price of other canned goods are as follows:

Canned mustard plant (2 lb.)	18 to 25 cts.
Canned beef (1 lb.)	32 to 40 cts.
Dried cabbage (2 lb.)	36 cts.
Jam (1 lb.)	20 cts.

The bulk of the product of these factories is made to order. At the end or beginning of each year travellers are sent by the factories to the grocery stores in consuming districts to solicit orders. Part of the price is paid upon delivery, the balance being paid on the usual days observed for settlement of obligations.

CHAPTER XIV

CONDENSED MILK

A VERY large quantity of condensed milk is imported into China every year, as this commodity is not extensively produced in this country. In recent years, however, several factories have been established in Chekiang, though the total output is very small. In 1924 the Yu Kang Condensed Milk Factory (宇康煉乳廠), later known as the Po Lin Factory (栢林煉乳廠), was established at Juian, and though very small, producing only a few dozen tins of milk a day, it had the distinction of being the first enterprise of its kind in China. In subsequent years several other factories came into existence at Juian, the largest being the Pe Hao Factory (百好煉乳廠). The Hsi Hu Company (西湖煉乳公司) established a factory at Hangchow in 1928 and, in spite of its short career, this is now the leading condensed milk factory in Chekiang.

There are four concerns making condensed milk at Juian. The Pe Hao factory, though the largest, still employs primitive methods of production, and only a few modern machines have been installed on account of its limited capital. The Hsi Hu factory at Hangchow, however, is equipped with the latest modern plant except can-making machinery and cold-storage equipment. Details of the Chekiang factories are shown in the following table:—

	Location	Organization	Capital	Works	Trade-marks
Hsi Hu (西湖煉乳公司)	Hangchow	Partnership	$70,000	12	Swallow
Pe Hao (百好煉乳公司)	Juian	Private	10,000	15	Sun and Eagle
Po Lin (百林煉乳公司)	,,	Partnership	8,000	10	Stork, Gull
Pei Er Sheng (倍而生煉乳廠)	,,	,,	6,000	7	Angel
Ai Hua (愛華煉乳廠)	,,	,,	8,000	5	Pigeon, Ball

The Hsi Hu factory has a dairy-farm of its own, on which are 285 cows of imported breed, including Ayrshire,

Jersey, Holstein, Jersey, Holstein short-horn, and some improved Chinese and Japanese stock. The pure-bred imported cattle yield the most milk, from 25 to 50 pounds daily, while Chinese and Japanese cows give only from 6 to 20 pounds. The milking term of an imported cow is about 18 months; almost twice as long as that of Chinese and Japanese animals, but the latter's milk contain a higher percentage of cream, and is more suitable for the manufacture of condensed milk. During the summer, when the factory suspends operation owing to lack of cold-storage equipment, the farm sells its fresh milk to outside customers.

In Juian most of the fresh milk used for condensing is supplied by farmers. Only very few cows, usually of mixed breed, are kept on the farms owned by the factories.

As condensed milk contains 16 per cent of sugar, the import of refined sugar is an important item in the business. Chekiang factories use Taikoo sugar, which they buy from Hongkong through importers in Shanghai.

For making cans American tinplate is used, supplies being also bought from merchants in Shanghai.

The product of the Hsi Hu factory is put up in cans of one pound and two ounces, selling at $5.75 and $1.20 per dozen respectively. The milk made by Juian factories is packed in boxes containing four dozen 14-ounce cans or 20 dozen 77-gram cans, the former being sold at $20 per box, and the latter at $26. The Hsi Hu factory produces annually about 160,000 cans of milk, which, together with by-products such as butter, chocolate, etc., are valued at more than $20,000. The total output of the factories at Juian is about 18,000 boxes.

The product of the Hsi Hu factory is sold in various parts of the Yangtze valley through Shanghai, where a sales department is established. The sales offices of Juian factories are established in Yungchia, and their product is sold all over the country, with Shanghai, Swatow, and Amoy as the principal markets. In recent years, owing to the increasing demand for condensed milk in China, these factories have been doing good business, and sales-agents have been sent to many of the larger cities and ports in new territory.

CHAPTER XV

HAM AND BACON-CURING

NEXT to the provinces of Yunnan and Kiangsu, Chekiang is the most important center of the bacon-curing industry in China. Tungyang produces the largest quantity in the province, but hams cured in Chekiang are generally known as Chinhua hams. The most popular variety is produced in the village of Shangchiang (上 蔣), in Tungyang, though in the district of Pukiang "bamboo smoked" hams are made which are greatly esteemed by Chinese epicures owing to their fine flavor.

The soil in these districts consists principally of sandy loam, which needs frequent and generous fertilization, hence pigs are raised almost on every farm to provide manure for the fields as well as for stock purposes. According to a recent investigation, 759,600 pigs are raised annually in these districts, distributed as follows:—

	Pig Raising Farms	Pigs Raised Annually
Lanchi	45,000	180,000
Tungyang	85,000	170,000
Iwu	95,000	142,500
Chinhua	54,300	108,600
Pukiang	45,000	67,500
Yungkang	20,000	60,000
Wui	31,000	31,000
Total	375,300	759,600

About one-fourth are slaughtered locally to make fresh pork, another fourth are sent alive to Hangchow, Chiahsing, etc., while half the number are converted into salted pork and bacon.

Farmers sell their pigs through *hongs* in the cities, which charge a commission of 30 cents a head. The price of a pig is decided by weight, and an animal suitable for ham-making, weighing 100 catties, is worth approximately $16. In the winter agents are sent by curers to buy hindquarters of pork in the villages. Sometimes, though rarely, live animals are bought, and in such cases the hindquarters are made into hams, while the other parts are used for making salted pork and sausages.

Farmers buy suckling-pigs weighing from 20 to 30 catties each from breeders, and after being fed for six months they are usually full-grown, weighing over 100 catties.

The pork made from pigs raised in these districts is of better quality than that from animals raised in Kiangsu, which are of the black-haired variety, while those of Chekiang are white, with white feet. The cleaner habits and better feeding of this variety probably explain the superior quality of the meat.

A dry atmosphere and even temperature are essntial to the making of good hams, and consequently winter is the most active season for curing in these districts, though small quantity of hams are also made in the spring. Carcases are first divided into flanks, fore-quarters and hind-quartrs, the latter being made into hams, and the remainder used for salted pork and sausages. The hind-quarters are first scalded, cleaned and cooled, when a little salt is applied to the fleshy part of the hams, which are then placed on bamboo racks in the curing-room so that the melting salt can run off and not give too salty a flavor to the meat. This process is repeated twice after intervals varying from a week to 20 days, according to temperature. A week after the hams have been salted for the third time they are washed in cold water and trimmed into the shape seen in the shops, the waste being used for making sausages. The hams are then exposed to the sun for five or six days, and when sufficiently dry are smeared all over with vegetable oil as a protection against insects and mould. Before being sent to market they are stored in a cool and dry place for eight or nine months, and lose from 30 to 40 per cent of the original weight in the whole process of manufacturing.

For the wholesale trade hams are packed in bamboo crates containing from 40 to 50 pieces, weighing 180 catties. The all-in value of a crate of hams, including the cost of the fresh pork, salt, labor and freight, is approximately $130.

In these districts of Chekiang ham-curing is a side-line of considerable importance to pig-raising farmers, just as sericulture is to farmers around Hangchow, Wuchow, and

Chiahsing. As these curers are scattered about in various parts of the country, it is almost impossible to ascertain their number or output, but in the cities, curing-factories on a much larger scale are found, and in these establishments hindquarters collected from the farmers are made into hams, each factory employing from 15 to 30 men.

The following table shows the quantity and value of hams and bacon produced in the districts named during the last four years:

	1931		1932	
	Hams (piculs)	Bacon (picul)	Hams (piculs)	Bacon (piculs)
Tungyang	278,740	6,968.50	269,820	6,745.50
Lanchi	171,553	4,288.82	102,340	2,558.50
Iwu	162,105	4,052.63	150,341	3,758.54
Chinhua	83,340	2,083.50	69,340	1,733.50
Pukiang	78,460	1,961.50	60,300	1,507.50
Yunkang	22,000	550.00	24,000	600.00
Wui	18,000	450.00	16,000	400.00
Total	819.198	20,354.95	692,141	17,303.54

	1931		1932	
	Value of Hams	Value of Bacon	Value of Hams	Value of Bacon
Tungyang	$975,590	$243,898	$944,370	$236,093
Lanchi	600,435	150,109	358,190	89,548
Iwu	567,368	141,842	526,195	131,549
Chinhua	291,690	72,923	242,690	60,673
Pukang	274,610	68,653	211,050	52,763
Yunkang	77,000	19,250	84,000	21,000
Wui	63,000	15,750	56,000	14,000
Total	2,849,693	712,506	2,422,495	605,525

It will be seen from the above figures that the output was increasing until 1932 in which year the drop in production was mainly attributable to the Japanese invasion, and particularly to the conflict in Shanghai.

The principal markets in Chekiang are Lingpo, the distributing center of Ningpo, Shaohsing, etc., and Hangchow, where supplies intended for Shanghai and foreign markets are first collected. In other districts only small transactions are carried on. The ham trade of Lingpo, however, amounts to only 20 per cent of that handled in Hangchow. Since the completion of the Hangchow-

Kiangshan railway, the transport of hams from the producing districts to Hangchow has been given additional facility, although the freight is now slightly higher than in the days when waterways were the only means of transportation.

In Hangchow there are ten ham *hongs* engaged in wholesale buying and selling for customers, and a large number of retail dealers. The following details about the *hongs* are the latest available:—

	Capital	Business Handled during 1931	
		Hams	Salted Pork
Fu Ta Chang Chi	$10,000	$ 95,000	$111,800
Ho Chi Heng Chi	7,200	85,000	50,000
Chen Tung	5,000	100,000	100,000
Ta Tung	3,000	43,000	60,000
Jen Chang	5,000	30,000	22,000
Chin Tai Chang	6,250	30,000	140,000
Chen Ta	5,000	90,000	100,000
Yung Chang	7,000	132,000	62,000
Lung Chang	5,000	64,000	396,700
Yung Ta Chiu Chi ...	5,000	90,000	100,000

Curers in the country districts bring their products to Hangchow at their own expense, where the hams are first stored in warehouses established by the *hongs*. If the owner is in pressing need of money, he can either sell immediately at a discount to the *hong* in whose warehouse the hams are stored, or borrow from the *hong* with the hams as security, interest of about 15 per cent being usually charged on such loans. When the goods are sold the *hong* receives a commission of 6 per cent, while pending sale it furnishes board and lodging to the owner or his representative. Warehouse expenses, amounting to about 15 cents per crate, including unloading and storing, are also paid by the owner of the goods.

Prior to 1930 the Chekiang Provincial government imposed a tax on hams produced in the province which brought in $81,000 a year. This tax was farmed out to the Ham Manufacturers' Guild, which sent agents to the producing districts to collect the tax at the rate of 9 cents per ham. This levy was discontinued when the Business Tax was imposed, and a wholesale merchant now pays an annual tax of 5 per cent of his capital, while a retailer pays 10 per cent.

CHAPTER XVI

TOBACCO FACTORIES

A CONSIDERABLE quantity of tobacco is grown in the districts of Hsiaoshan, Ch'enghsien, Hsinch'ang, Sungyang, T'unghsiang and Haining and the manufacture of pipe tobacco has a long history in the province, but in recent years large quantities of cigarettes have been imported. The Municipality of Hangchow alone imports direct from abroad $400,000 worth of cigarettes annually, in addidtion to those imported through Shanghai. In 1931 the cigarettes consumed in the municipality amounted to $2,000,000 in value, while the value of cigarette imported through the port of Ningpo reached the higl. figure of Tls. 4,200,000. In view of the growing demand, cigarette factories began to be established in the province, and the old industry of manufacturing pipe tobacco is gradually disappearing.

The Han Ling Cigarette Factory, (韓嶺捲烟廠), the first of its kind in the province, was established at Ninghsien in 1926, and in the next two years three other factories were established in that district. The total output of these four concerns amounted annually to 2,500 cases, worth more than $200,000, but owing to keen competition from the British-American Tobacco Company, Shanghai, the factories at Ninghsien, except the Han Ling works, were forced to close down.

The Han Ling cigarette factory has a capital of $20,000, cases, most of the leaf used comes from America, while a employs 37 workers, and its annual output is about 500 small portion is bought from Hsinchang, about 3,000 piculs being consumed annually. American leaf costs from $40 to $50 per picul, and the native leaf from $17 to $20. Flavoring is bought from Germany, and cigarette-paper is imported from Japan and Italy.

The manufacturing of pipe tobacco is taken up in almost every tobacco-growing district, and in Sungyang

the grocery-stores and cigarette-shops usually make tobacco manufacturing a sideline, only a cutting-machine being needed in the way of plant. There are more than 100 such manufacturers in the district, with a total annual output of 200 piculs of "yellow" tobacco (黃 煙) valued at $4,000 and 800 piculs of "native" tobacco (土 烟), valued at $12,000. The entire output is consumed locally, and leaf grown in the district is used for raw material. As most of these manufacturers are also retailers, they have only to pay a license-fee for selling tobacco, no other tax being imposed. Similar pipe tobacco manufacturers are found in Fenshui and other tobacco-producing districts, though their output is much smaller than in Sungyang.

The tobacco made by all these manufacturers (except those in Hangchow) is consumed locally, but from Hangchow, which may be called the centre of this industry, considerable exports of pipe tobacco are made. In former years scores of pipe tobacco manufacturers were established in that city, some of them, like Mi Ta Chang (宏大昌), having history of several hundred years. Several million dollars worth of tobacco was produced annually, but on account of keen foreign competition and increasing taxes, production has decreased by about 40 per cent compared with former years. There are now only 18 tobacco manufacturers in Hangchow, the most prominent being Mi Ta Chang, with a capital of $30,000 and a turnover in 1931 amounting to Tls. 340,000.

Most of the leaf used by Hangchow manufacturers comes from Chinhua, Chühsien, Chienteh, Lishui, Hsinchang, Ch'enghsien, and Chiahsing. The product of Chiahsing is very easily brought to Hangchow, while supplies from other districts are transported by boat on the Fuchunkiang (富 春 江), Hangchow also grows some tobacco, but the output is very limited.

The manufacture of pipe tobacco is divided into five processes as follows:

1. Picking out the veins from tobacco leaf.

2. Moistening.—Dried tobacco leaf is very brittle, and moisture must be applied in order to avoid breaking.

3. Blending.—Two or more varieties of tobacco are mixed together to obtain the desired strength and flavor.

4. Cutting.—Moistened tobacco leaf is placed in heap and cut with a knife into small pieces.

5. Drying.—Before sale tobacco is dried over a fire, which process gives it a better flavor and prevents mould during the wet season.

The strength of pipe tobacco varies greatly according to differences in blending. Generally the milder quality fetches a higher price. In Hangchow, pipe tobacco is sold at from 20 to 60 cents per catty.

About 40 per cent of the total output of Hangchow is exported, the balance being consumed locally. Tobacco is packed in bamboo crates containing 50 catties, the tax on each crate being about $2.10.

CHAPTER XVII

POTTERY

THE CERAMIC products of Chekiang are not large in value or volume, and include porcelain, earthenware, and bricks and tiles. Fine porcelain is produced in Lungchuan, Tungyang, Yungchia and Taishun, the ware from Lungchuan being famous since the days of the Sung Dynasty. Earthenware made in Wukang, Changhsing, and neighboring places includes wine jars and tubs. The annual output of these kilns is worth about $300,000, most of the ware being sold to wine makers and merchants, upon whom this industry really depends. The manufacture of earthenware is taken up as a secondary occupation, a kiln being owned by a small group who each contribute a small amount of capital, and employ about ten workers. The working seasons are very irregular, averaging about six months in a year, as the demand is limited. There are 34 such kilns in the Province.

Bricks and tiles are produced in Chekiang to the value of about half a million dollars a year. Most of the kilns are situated in Shaohsing, Wukang, Yungchia, Juian, Hsiaoshan, Tangchi, Shunan, Sungyang, Fuyang, and Lotsing. Kilns have been started in Tunghsiang, but without much success. The total number of brick and tile kilns in the Province is about 430.

The following table gives details of the various classes of kilns in Chekiang:—

PORCELAIN, EARTHENWARE, AND BRICK KILNS IN CHEKIANG

	Porcelain	Earthenware	Brick & Tile	Total	Annual Production
Lungchuan	13	—	—	13	$ 20,000
Taishun	2	—	—	2	28,000
Tungyang	1	—	—	1	20,000
Yungchia	1	—	41	42	100,000
Chuchi	—	19	—	19	250,000
Changhsing	—	3	—	3	60,000

	Porcelain	Earthenware	Brick & Tile	Total	Annual Production
Juian	—	—	75	75	35,000
Lotsing	—	—	86	86	70,000
Shaohsing	—	—	71	71	85,000
Sungyang	—	—	8	8	8,700
Fuyang	—	—	9	9	50,000
Tunghsiang	—	—	1	1	4,000
Wukang	—	2	23	25	37,200
Tangchi	—	10	25	35	8,000
Shunan	—	—	33	33	9,000
Hsiaoshan	—	—	57	57	105,000
Total	17	34	429	480	
Value of Annual Production	$118,000	$320,220	$501,700		$939,900

Most kilns are operated on a very small scale, some with a capital as small as $100, and rarely exceeding $3,000, and are usually owned by an individual proprietor. There are over 2,000 families engaged in the industry, and the total number of persons employed is about 6,000. The earthenware business is being carried on satisfactorily, but the porcelain trade has declined considerably, while bricks and tiles are disposed of locally.

RAW MATERIALS

In making fine porcelain glazes are obtained from Chingtehchen, Kiangsi province, but all other materials are obtained locally. Clay suitable for ceramic purposes is found in abundance all over the district, and kilns are built where the necessary supplies of raw material are most conveniently obtainable. The sources of supply and some approximate prices are as follows:—

Material	District	Products	Prices
Kaolin	Lungchuan, Taishun, & Tungyang	Mould	$1 per 250 catties
Clay	Wukang, Chu-Chi & Chu-hsien	Jar and tub moulds	Clay field about $300 per *mou*
Fire Clay	Lungchuan	Porcelain Mould	$1 per 300 catties

Material	District	Products	Prices
Clay soil	All hsien	Brick & Tile Mould	———
Red Clay	Chinhua Hangchow	Tubs	———
Fine Sand	Chuchi	Earthenware	$1 per 1,500 catties
Colour stones	Hanghsien	Tubs & Jars	———
Glazes	Lungchuan	Porcelain glazing	———
Tub glazes	Changhsing	Tub glazing	———
Lime, Iron	———	———	———
Dust, & Rice Husks	Chuhsien	Glaze making	———

The value of the annual production of porcelain is about $118,000, but the output has been declining on account of diminishing demand, the Chekiang product being much inferior in quality to that from Kiangsi and imported ware.

The earthenware industry is very prosperous, requiring a very small amount of capital and little skilled labour. The cost of production is low, and the work is often taken up as a side-line by farmers who can provide the little required to start business. It is because of this that production is cheap, and the kiln output often exceeds the demand, necessitating suspension of work for at least six months in a year. The busy season is the first half of the year, and the annual production is about $320,200 in value.

The number of brick and tile kilns appears large, but the production of each is exceeding small, and the aggregate total is not more than about $500,000 a year, not quite enough to meet the demand within the Province.

The total production of porcelain, earthenware, and bricks and tiles amounts in value a little less than a million dollars annually. Most of there goods are marketed in the province, earthenware being almost exclusively sold to wine merchants in Shaohsing, while bricks and tiles are shipped in small quantities to Ningpo and Hangchow.

CHAPTER XVIII

GLASSWARE

THE FIRST glass factory in Chekiang was the Chin Kang Glass Factory (蓁 康) established in 1909 at Yungchia, operated in a exceedingly small scale employing only a few workers. The Ming Hua glass factory (明 華) in Ningpo, established in 1918 in Ningpo, was the first one operated in a larger scale. Many other factories were established since 1921, the more important ones being the Jen Ho (仁 和), established in 1923 in Hanghsien, the Kung I (公 益), established in 1925 in Yungchia, the Min Sheng (民 生), established in 1926 in Hanghsien, the Chin Chi (錦 記), established in 1930 in Lanch'i and the Kung Yeh Chih Chi (工業至記), established in Ninghsien in 1931.

The largest of these mills is the Min Sheng Glass factory of Hanghsien, which has a capital of $70,000, and employing about 90 workers. The other factories are much smaller in scale, and the number of workers is from 50 to 85, with the two smallest employing only 10 men. These workers are mostly men, with a few women and children. They receive from $12 to $30 per month, and the working period is generally ten hours a day. Most of the factories are equipped with electric motors or engines, and other necessary apparatus for making glass. The following table shows the details of the glass factories in Chekiang.

	Location	Established	Capital	Workers
Min Sheng	Hanghsien	1926	$70,000	90
Ming Hua	Ninghsien	1918	30,000	80
Jen Ho	Hangchow	1923	5,000	85
Chin Chi	Lanchi	1931	10,000	48
Kung Yeh Chih Chi	Ninghsien	1931	10,000	66
Chin Kang	Yungchia	1909	1,000	10
Kung I	Yungchia	1925	1,000	10

RAW MATERIALS

The chief raw materials used in making glass are silicate, salt peter, fluorspar, mananese powder, alkali, and sulphuric acid. Excepting the last two named, all the other materials are abundantly found in China.

Silicate—Silicate is commonly of two kinds, the white silicate and the yellow silicate. The white variety is produced in Kuangtung, containing very small percentage of iron anl is good for making fine glass, while he yellow variety found in Ninghsien contains high percentage of iron and is suitable only for inferior grades of glass.

Saltpeter—Saltpeter, or sodium sulphate is abundant in the Three Eastern Provinces, Shantung, Hopei, Honan, Shansi, Kiangsu, Hunan, Kuichow, and Hupeh. Because the high cost due to the difficulties in transportation, most of the factories are buying this material from Chile.

Stone powder—Stone powder is chiefly supplied by the Lu Ho Stone Powder Company (六合石粉公司), Hangchow, and the Shun Chang Stone Powder Factory (順昌公司), Shanghai, at $16 per ton.

Alkali—Alkali was chiefly imported from abroad, but the supply of the Pacific Alkali Company of Tangku (塘沽永利製碱公司) has recently adequately meeting the demand. The price is about $14 per box.

Fluorspar—This mineral is most important in glass making, and is abundantly found in Chinhua and other places in the Chekiang province. The price is about $17 per ton.

Sulphuric Acid—Sulphuric acid used to be imported from Japan and Great Britain, but the supply of the Kai Cheng Acid Company (開成造酸公司), Shanghai has now able to supply the demand, at about $14.60 per ton.

Manganese powder—Manganese powder is obtainable in the provinces of Kuangtung, Kuangsi, Hunan, Kiangsi, Hupeh, and Yühang, Changhua, and Hanghsien of this Province. The price is about $8 per piculs.

Broken glass—collected at about $12.0 to $2 per picul.

PRODUCTION

The products of the factories in Chekiang consist chiefly of glass-wares for daily use or for educational or medical purposes. The bulk consists of lamp chimneys, lamp shades, bottles, and jars. The value of the output is small, that of the Min Sheng being valued at about $90,000, Ming Hua, $79,000, Jen Ho, $8,2000 Chin Chi, $30,000, Kung Yeh Chih Chi, $40,000, Kung I, $5,000, and Chin Kang, $3,000.

MARKETING

The products of the glass factories are sold only to local and neighborhood places. The chief market for the Min Sheng and Jen Ho factories are Hanghsien, Changhsing, Wuhsing, and Shanghai, that for the Ming Hua and Kung I Chih Chi, Ninghsien, Shaohsing, Taichow, Yungchia, that for the Chin Chi, Chinhua and Chühsien. The output of Chin Kang are sold only in Yungchia and Taichow. Because of higher prices of imported products, the output of these mills are able to find ready demands.

The factories usually make the wares in accordance with the specifications of the buyers, and the products are sold either by piece, by dozen, or by hundreds. Goods are also sold by samples turned out by the factories. The methods in transaction are not much different from the general practice in other trades.

CHAPTER XIX

PAPER MANUFACTURING

MACHINE-MADE PAPER

THE PAPER-MILLS in Chekiang are the Min Feng (民豐) in Chiahsing and the Hua Feng (華豐), in Hangchow. The latter, originally called the Wu Lin Paper Company (武林造紙廠) was started in 1921 by a Hangchow merchant, Mr. Yu Tan Ping (俞丹屏), but owing to financial difficulties the concern was transferred to the management of Hangchow Electric Power Plant (杭州電廠), and subsequently mortgaged in 1929 to the Ching Cheng Paper Company (竟成造紙廠), Shanghai, and was known as mill No. 5. In 1931 the plant was sold to the Hua Feng Paper Company, which now operates the concern.

The Min Feng Paper Company, originally known the Ho Feng Paper Mill (禾豐) was started by Mr. Chu Wei Sun (褚慈僧) in 1924, but was not put into operation until 1925. Owing to financial difficulties the property was mortgaged to the Ching Cheng Paper Company (竟成), and was known mill No. 4. After the mortgage was paid off in the winter of 1929, the plant was sold to the Min Feng Paper Company, the present proprietors.

About 18 years ago the description of paper manufactured by the Min Feng Mill and the Hua Feng Mill were mostly *huang chih pan* (黃紙板). Owing to keen demand the Min Feng Mill in 1931 installed machinery and engaged experts to plan ways and means of improving the quality and increasing output. The varieties now produced include *po pai chih pan* (薄白紙板), *hou tan pai chih pan* (厚單白紙板), *ching hui chih pan* (青灰紙板), *ti hua chih pan* (提花紙板), *te hui chih pan* (特灰紙板), and *te hua chih pan* (特花紙板).

The Hua Feng and Min Feng Mills are each organized on a partnership basis, and are capitalized at $500,000

each. The number of workers employed in the two mills is 656, of which total the Min Feng has about two-thirds. The premises of the Hua Feng Mill covers about 86 *mou*, and the area of the Min Feng Mill is 30 *mou*, both being equipped with machinery of British and American make. The workers at the Hua Feng mill are recruited from Shaohsing, Chuchi, Ningpo, and Canton, local residents representing only 20 per cent of the total. Wages are paid by the month, while at the Min Feng Mill workers are paid by the day. The highest daily wage is $3, and the lowest 50 cents.

SUPPLIES OF RAW MATERIAL

Machine-made paper manufactured in Chekiang is classified as *huang chih pan* (黃紙板), *pai chih pan* (白紙板), and *hui chih pan* (灰紙板). The raw material for making *huang chih pan* is straw and lime; for *pai chih pan*, waste paper and rags, and for *hui chih pan*, straw and waste paper. The following table shows the annual consumption of raw material in the Min Feng and Hua Feng Mills, quantities being expressed in piculs:

	Min Feng	Hua Feng	Total
Straw	70,000	145,000	215,000
Lime	—	12,000	12,000
Waste paper	60,000	10,000	70,000
Rags	30,000	—	30,000

Twenty-eight piculs of straw are required to make one ton of *huang chih pan*; 12 piculs of waste paper and 15 piculs of rags for the same quantity of *pai chih pan*, and 14 piculs of waste paper and 14 piculs of straw are needed in making one ton of *hui chih pan*. The raw material consumed by these two mills amounted in value to $372,070, of which rags represented 44 per cent, waste paper 31 per cent, and straw and lime 22 and 3 per cent respectively. The following shows the annual consumption of raw material by these two mills:

	Piculs.	Price per picul.	Total value.
Straw (Min Feng)	70,000	0.50	$35.000
„ (Hua Feng)	145,000	0.33	47,850
Lime (Hua Feng)	12,000	0.735	8,820
Waste paper (Min Feng) ..	60,000	2.40	104,000
„ „ (Min Feng) ..	10,000	1.20	12,000
Rags (Min Feng)	30,000	5.48	164,400
Total	—	—	372,070

The Hangchow mills get their raw material from P'ingyao (平窰), Shihmen (石門) and Chuts'un (朱村), with lime from local kilns and waste paper from local dealers and Shanghai. Raw material used in Chiahsing is obtained locally and from Shanghai and Wuhsien.

PRODUCTION

The method of manufacturing *huang chih pan, pai chih pan,* and *hui chih pan* are somewhat similar. The chief raw material for making *huang chih pan* is straw, which is cut up and boiled in lime solution until reduced to pulp, which then goes to a specially constructed pit fitted with drum-washers which remove the dirt, sand, and other impurities. The pulp then goes through mechanical process of drying and beating, and is converted into sheets which are cut to the size desired. The method of manufacturing *pai chih pan* and *hui chih pan* is similar, except that in making the former waste paper and rags are used, while for *hui chih pan* a mixture of straw and waste paper is used.

Yellow strawboard is used for making boxes, and is manufactured largely by the Ching Cheng Company (竟成), Shanghai, Chen Hua Company (振華), Tientsin, and the Ta Hua (大華) and Hua Sheng (華盛), Wuhsien. Being rough in texture and unattractive in color, this strawboard is not suitable for making decorative boxes, and to make containers more attractive a sheet of colored paper is pasted on the strawboard. The Min Feng Company, Chiahsing produces many varieties of strawboard, including

huang chih pan (黃紙板), *po pai chih pan* (薄白紙板), *hou tan pai chih pan* (厚單白紙板), *ts'ing hui chih pan* (青灰紙板), *ti hua chih pan* (提花紙板), *teh hui chih pan* (特灰紙板) and *teh kuang chih pan* (特光紙板). The *hui pai chih pan*, white and smooth on one side with a slightly rough surface on the other, is used for making boxes for overshoes, flushlights, and cigarettes. The *ts'ing hui chih pan*, light blue on one side and a darker blue on the other, is used for printing, while *ti hua chih pan*, *te hui chih pan* and *teh kuang chih pan* are used for various packing purposes, including egg and cigarette boxes. Sometimes strawboard is used for railway tickets.

The amount of strawboard turned out annually by the Min Feng mill is estimated at 4,700 tons, the price per ton varying according to grade, while the Hua Feng annual production amounts to 6,000 tons, the price of *huang chih pan* being $70 per ton.

LOCAL AND OUTSIDE MARKET

The markets for *huang chih pan* include Shanghai, Canton, Hongkong, and Straits Settlements, with Canton and Hongkong taking 50 per cent, followed by Shanghai with 25 per cent. There is an increasing demand in the Straits Settlements, where branch sales offices have been established, taking about 25 per cent of the total output. In the north the products of the Chen Hua Mill are very popular, displacing the Chekiang products which the Tientsin public used to buy largely.

The *po pai chih pan* (薄白紙板) is used for packing cigarettes, and being a new product is not yet very popular, the only important markets being Shanghai and Canton. There is a duty on foreign paper imported into Canton, so that the domestic product is in good demand, totalling 400 tons per year, while Shanghai's annual consumption represents 80 per cent of the total output. The price per ton at Shanghai and Canton is $210.

The *hui pan* (灰板) is used for making large cigarette-boxes, the annual production being 3,000 tons at $200 per ton. The markets supplied are Shanghai and Canton, the

former taking 80 per cent and the balance going to the latter.

The *ti hua chih pan* (提花紙板) finds a market in Chiashing, Huchow, Shaoshing, and Soochow, the production being 100 tons at $300 per ton.

The *teh kuang chih pan* (特光紙板) is used by soap factories in Shanghai, which take about 200 tons a year at $90 per ton.

The products of the Min Feng factory are similar in quality to imported goods, but owing to its recent establishment the market is not yet very extensive.

TRADING METHODS

Business is transacted either by credit or cash, the former system being adopted in Shanghai, while in South China and Straits Settlements the usual terms are cash. In making contracts the terms are stipulated relating to quantity, price, and date of delivery. When a contract is signed a deposit is usually paid, and the balance settled on delivery of the goods. When a consignment is shipped to Shanghai, freight is paid by the manufacturers, but if the consignment is to be delivered at some other place, freight is paid by the buyers.

HAND-MADE PAPER

Since the invention by Tsai Lun (蔡倫) during the Han Dynasty of writing material made from fibrous pulp the production of hand-made paper is common almost everywhere in China, with Kiangsi, Fukien, Chekiang and Anhui leading in production. During the Sung dynasty Chekiang was already famous for the production of hand-made paper, with *chu chih* (竹紙), or bamboo paper, of Hweichi (會稽) considered the best variety. During the Min and Ching Dynasties the *chu shao chih* (竹燒紙) of Lungyu and Yühang (餘杭), *Cho chih* (鐲紙) of Wenchow, *pi chi* (皮紙) or Ninghsien, Fenghua, and Anchi and *li jih chih* (歷日紙) of T'unglu and Ch'angshan were first in quality. *Hsu tsing chih* (徐青紙) of Fenshui and

tsao chih (草紙) produced in eastern part of Chekiang are also well-known. The producing districts at the time included Hanghsien, Yühang, Linan, Yuch'ien, Hsinteng, Ch'anghua, Chiahsing, Wuhsing, Anchi, Hsiaofeng, Ninghsien, Tsuch'i, Fenghua, Chenhai, Tinghai, Hsiangshan, Shaohsing, Hsiaoshan, Chuchi, Yüyao, Shangyu, Ch'enghsien, Hsinch'ang, Linghai, Huangyen, Ninghai, T'ient'ai, Hsienchü, Chinghua, Lanch'i, Tungyang, P'ukiang, Ch'ühsien, Lungyu, Kiangshan, Ch'angp'ing, K'aihua, Chienteh, Shunan, T'unglu, Shuian, Fenshui, Yungchia, Lishui, Ts'ingt'ien, Chinyun, Sungyang, Shuichang, Lungchuan, Ch'ingyuan, Yunho, Hsuanp'ing and Chingning but at present the production of paper has ceased in the following places:—Hanghsien, Chiahsing, Wuhsing, Ningpo, Tsuch'i, Chenhai, Tinghai, Hsiangshan, Ninghai, Lanch'i, Kaihua, Shunan, Fenshui, Ts'ingt'ien, Shuich'ang, Lungch'uan, Yunho, and Hsuanp'ing, while places where production was not good but has now increased include Wuling, Yungkang, Wui, T'angch'i, Shouch'ang, Juian, P'ingyang, and Taishun. The rapid increase in the amount of paper imported from abroad has resulted in a slump in handmade paper.

The descriptions of paper produced in Chekiang are *chih po* (紙箔), *shao chih* (燒紙), *tsao chih* (草紙) and *chu chih* (粗紙), varieties suitable for printing and writing having practically disappeared. The following list shows the various descriptions of paper produced in 43 districts:

Fuyang:—*lu ming* (鹿鳴), *ching fang* (京放), *hai fang* (海放) *lu tsien yuan shu* (六千元書), *wu tsien yuan shu* (五千元書), *ching pien* (京邊), *chang pien* (長邊), *ta huang chien* (大黃箋), *huang shao chih* (黃燒紙), *chang shan* (昌山), *chang huang* (廠黃), *chu kao* (粗高) *kuai tou chih* (塊頭紙), *shang pi chih* (桑皮紙), *hang pien* (坑邊), *how tou* (厚斗).

Yuhang:—*hsiao lien huang shao chih* (小連黃燒紙), *yuan shu* (元書) *hai fang* (海放), *huang yuan* (黃元), *ta ching fang* (大京放), *ta lien* (大連)*shang pi chih* (桑皮紙), *tsao chih* (草紙).

Linan:—*lu tsien yuan shu* (六千元書), *wu tsien yuan shu* (五千元書), *huang shao chih* (黃燒紙), *hai fang* (海放), *ta chang shan* (大昌山), *piao hsin* (裱心), *hung piao* (紅表), and *tsao chih* (草紙).

Yuch'ien:—*tao hua chih* (桃花紙).

Hsinteng:—*ping chih* No. 3 (三號屏紙), *hai feng, liang san chih* (兩傘紙), *tsan chung chih* (整種紙), *tsao pi chih* (草皮紙), *kang pien* (坑邊), and *ta tou* (大斗).

Ch'anghua:—*san lien mao pien* (三連毛邊), *chu hsiang chih* (箱箱紙), *tao hua chih* (桃花紙), *ta shen pi* (大參皮), *kuo shen pi* (國參皮), *lu yin tsan* (六印參), *pai liao chi yin tsan* (白料七印參), and *mao tsao chih* (毛草紙).

Anchi:—*Tsao chih* (草紙).

Hsiaofeng:—*Ch'angshan* (昌山), *wu tsien yuan shu* (五千元書), *lu tsien yuan shu* (六千元書), *fang kao* (方高), *huang yuan* (黃元), *nanp'ing* (南屏), *hai fang* (海放), *huang tsien* (黃箋), *mao chush lien* (毛角連), *chu kao* (粗高), *pan chien* (板箋), *kiang chien* (江箋).

Fenghua:—*Lu ming* (鹿鳴), *tsun liao* (罇料), *hsu tsing* (徐青), *wu tsing* (烏青) *ai kuo pi chih* (愛國皮紙), *er chu pi* (二具皮), and *hou tou* (厚斗).

Shaohsing:—*hsiao lu min* (小鹿鳴), and *tsao chih* (草紙).

Hsiaoshan:—*huang tsien* (黃箋), *huang ching fang* (黃京放), *huang yuan* (黃元), *ta ching fang* (大京放), *pai chien* (白箋), *lu ming* (鹿鳴), *yuan shu* (元書), *changshan* (昌山), *lien* shih (連史).

Chuch'i:—*ta hsiao lu ming* (大小鹿鳴), *nan ping siao ching fang* (南屏小京放), *yuan shu pien huang* (元書邊黃), *lien chi* (連七), *huang chang pien* (黃長邊), *lien shih ching fang* (連史京放), *yang pi chih* (洋皮紙), *ta tsao chih* (大草紙), and *tsao chih* (草紙).

Yuyao:—*chi ping* (溪屏).

Shangyü:—*chi ping* (溪屏).

Ch'enghsien:—*nan ping* (南屏), *lien wu* (連五), *huang chih* (黃紙), *pi chih* (皮紙) and *tsao chih* (草紙).

Hsinch'ang:—*hua chien* (花箋), *chi yuan chih* (溪源紙), *shang pi chih* (桑皮紙), *tsao chih* (草紙).

Linhai:—*tsien chang* (千張), *chung tsing chih* (中青紙).

Huangyen:—*tsien chang* (千張), *chung tsing chih* (中青紙), *ta hsiao tou fang* (大小斗方).

Wenling:—*hsiao fang tsao chih* (小坊草紙).

T'ient'ai:—*hua chien* (花箋), *nan ping* (南屏), *pu chih* (譜紙), *hsiao pai chih* (小白紙), *chang lien* (長連), *pi chih* (皮紙), Hsienchu:—*shao chih* (燒紙), and *pi pai chih* (皮白紙).

Chinhua:—*ta lien chu chih* (大簾粗紙), *hsiao lien chu chih.*(小簾粗紙), *si tsu chih* (細粗紙).

Yungk'ang:—*ching ping* (金屏), *chung fang* (中方).

Wui:—*Nan ping* (南屏), and *huang chien* (黃箋).

P'ukiang:—*lu chü chih* (六局紙), and *hung ting* (紅頂).

T'angch'i:—*nanping* (南屏) and *huang chien* (黃箋).

Ch'ühsien:—*nan ping, hua chien* (花箋).

Lungyu:—*ta hsiao huang chien* (大小黃箋), *nan ping* and *yuan shu*

Kiangshan:—*hua chien, fang kao* (方 高).
Ch'angshan:—*hua chien, and mien chih* (棉 紙).
Chienteh:—*lu yin shen* (六 印 參).
T'unglu:—*Hengta* (橫 大), *chang tou* (昌 斗), *keng pien* (坑 邊) *ming tsao* (名 遭), *and san ting* (三 頂).
Shuian:—*hua tsien, nan ping* and *chiao pai* (交 白).
Shouch'ang:—*hua chien.*
Yungchia:—*nan ping, mien chih* and *tou fang.*
Juian:—*nan ping, ya tou chih* (押 頭 紙) and *hsiao chih peng* (小 紙 蓬).
P'ingyang:—*tou fang* (斗 方).
T'aishun:—*mao pien,* and *hua chien.*
Chinyun:—*nan ping* and *tsao chih.*
Sungyang:—*sung chih* (松 紙), *mien chih* (棉 紙), and *yu chih* (油 紙).
Suich'ang:—*nan ping, huang chien, mien chih.*
Chingyuan:—*mao pien.*
Chingnin:—*hua pien* and *mao pien.*

Households where hand-made paper is manufactured are known as *tsao hu* (糟 戶), and it is estimated that the total number operating in Chekiang is 24,437. These *tsao ho* are found mostly in Fuyang, Yühang, and Yungchia, with Ch'ühsien, T'unglu Chuchi, Hsinteng and Hsiaoshan in this order of importance.

The capital invested in the hand-made paper industry amounts to about $5,000,000, of which $2,350,000 is in Fuyang, representing about 46 per cent of the total, while the position of other districts is as follows: Chuchi, Ch'angshan, Ch'ühsien and Yungchia, $200,000; Kiangshan and Hsiaoshan, $150,000; T'unglu, Hsinteng, and Huangyen, $100,000; Yühang, Shaohsing, Hsiaofeng, Lungyu, Juian, Chingyua, Linhai, Shangyü and Shuich'ang, $50,000; Linan, Chinhua, Wuk'ang, T'aishun, Shuian, Fenghua, Shouch'ang, T'angch'i, Sungyang, Yungk'ang, Chingyuan, Pukiang, Ch'anghua and T'ient'ai, $10,000; Hsinch'ang, Ch'enghsien, Yüch'ien, Wenling, $5,000; Chingning, Yüyao, P'ingyang, and Hsienchü, $1,000, and Chienteh and Anchi, below $1,000.

Workers engaged in making hand-made paper number 126,852, varying in each *tsao hu* according to the quality of paper produced. For instance, where bamboo is used, the number of workers varies from four to six, whereas in making *tsao chih* and *pi chih* only three workers are employed. The distribution of workers in Chekiang is as follows: Fuyang, 40,675, representing 32 per cent of the total; Yühang, 8,540, 7 per cent; Ch'ühsien, 7,047, 6 per cent; Chuchi, 6,166; T'unglu, 5,697; Yungchia, 4,244; Hsinteng, 3,831; Hsiaoshan, 2,971, and Linan, 2,909.

The annual production of hand-made paper in Chekiang is estimated at $20,850,487, each *tsao hu* contributing about $750 and a worker about $160. Among the various districts Fuyang ranks first in production with $8,667,912, representing 41 per cent of the total, followed by Hsiaoshan with $1,360,620, representing 6 per cent, while Ch'ühsien comes third with $1,034,783, representing 5 per cent. The share of other districts is as follows: Kiangshan, Chuch'i, $700,000; T'aishun, Yühang, $600,000; Linan, Yungchia, Huangyen, Shuian, $500,000; Lungyu and T'unglu, $400,000; Chinhua, $300,000; Hsiaofeng, Hsinteng, Chinyun, Ch'angshan, Linhai, Wui, Juian, Chingning over $200,000; Shaohsing, Fenghua, Shouch'ang, T'angch'i, Shangyü, Shuich'ang, Sungyang, Wenling, $100,000; Ch'enghsien, Yungkung, $80,000; Ch'ingyuan, $70,000; P'ukiang, $60,000; Yüch'ien and Ch'anghua, $50,000; P'ingyang, $40,000; Tient'ai, $20,000; Hsinch'ang, over $10,000 and Hsienchü, Chienteh, Yüyao, and Anchi, below $10,000.

PARTICULARS OF "TSAO HO"

	Number	Capital	Workers	Production
Fuyang	10,069	$2,355,082	40,675	$8,667,912
Yühang	2,052	68,892	8,540	671,100
Linan	786	40,973	2,909	548,028
Yüchien	104	6,092	270	54,921
Hsinteng	926	131,029	3,831	276,307
Ch'anghua	85	15,539	487	53,248
Auchi	2	400	12	2,120
Hsiaofeng	136	94,626	1,018	282,520
Fenghua	180	21,239	1,406	169,050
Shaohsing	476	63,715	2,939	179,880
Hsiaoshan	510	197,350	2,971	1,360,620

	Number	Capital	Workers	Production
Chuchi	1,110	206,123	6,166	724,450
Yüyao	2	2,488	12	4,752
Shangyü	54	57,221	324	127,224
Ch'enghsien	46	9,065	789	87,966
Hsinch'ang	60	8,027	255	16,836
Linhai	234	67,765	738	246,040
Huangyen	576	111,976	2,369	518,722
Wenling	340	5,508	680	100,980
Tient'ai	296	22,348	699	27,052
Hsienchü	36	1,658	205	8,988
Chinhua	422	44,648	1,266	308,642
Yungk'ang	16	19,647	240	85,194
Wui	32	39,068	448	243,456
P'ukiang	45	47,242	555	61,848
T'angch'i	45	23,112	720	155,420
Ch'ühsien	505	266,817	7,047	1,034,782
Lungyu	121	89,966	1,802	454,910
Kiangshan	154	168,067	2,490	753,336
Ch'angshan	296	276,400	4,376	274,800
Chienteh	4	852	35	5,400
T'unglu	1,136	112,275	5,697	405,347
Shuian	179	93,920	1,946	239,778
Shouch'ang	74	23,796	900	158,400
Yungchia	1,185	218,414	4,244	529,644
Juian	640	17,024	1,920	506,070
Pingyang	110	1,493	228	48,536
T'aishuen	297	19,763	1,945	685,200
Chinyun	122	66,794	1,243	274,807
Sungyang	792	13,229	11,488	108,913
Shuichiang	53	55,784	108	110,783
Chingyuan	54	10,368	359	71,156
Chingning	75	4,837	500	202,350
Total	24,437	$5,090,028	126,852	$20,850,487

RAW MATERIAL

The materials used in the manufacture of hand-made paper are bamboo, tree bark, and straw. Bamboo is found practically everywhere in Chekiang, but the following places are particularly well-known for their production: Fuyang, Hsiaoshan, Chuchi, Yühang, Linan, Wenling, and Ch'ühsien. The tree bark used is from mulberry trees and young bamboos the producing districts being Yühang, Linan, Yüch'ien, Hsinteng, Yungchia, Sungyang, Ch'angshan, Shuichang Chienteh, and Ch'anghua, while the districts from which supplies of straw are obtained include Fuyang T'unglu, Huangyen, Yungchia, Chinhua, Hsinch'ang, and P'ingyang.

Paper made from bamboo includes the following varieties: *hua chien* (花 箋), *yuan shu* (元 書), *lu ming* (鹿 鳴), *huang shao chien* (黃燒箋), *lien chi* (連 七), *fang kao* (方 高), *hai fang* (海 放), *mao pien* (毛 邊), *lien chih* (連 紙), *ching fang* (京 放), *shun ko chih* (筍 殼 紙), *chung tsing* (中 青), *pai chien* (白 箋), *huang chien* (黃 箋), *tsien chang* (千 張), *nan ping* (南 屏), *ya tou chih* (押 頭 紙), *tuan fang* (段 放), *chang pien* (長 邊), *huang ching fang* (黃 京 放), *ch'ang shan* (昌 山), *ching ping* (金 屏), *sung chih* (松 紙), *huang yuan* (黃 元), *chang huang* (廠 黃), *er hsi chih* (二 細 紙), *lien shih* (連 史), *chi ping* (溪 屏), *hsiao pai chih* (小 白 紙), *pien huang* (邊黃), *che pien* (折 邊), *mao ohueh lien* (毛 角 連), *lien wu* (連 五), *ping chih* (屏 紙) and *pu chih* (譜 紙), Varieties made from tree bark include *mien chih* (棉 紙), *shen pi chih* (參皮紙), *yu shan chih* (雨 傘紙), *pai lia lu yin chih* (白料六印紙), *shang pi chih* (桑 皮紙), *ai kuo pi chih* (愛 國 皮 紙) *pi chih* (皮 紙), *tao hua chih* (桃 花 紙), *tsao pi chih* (草 皮 紙), *chun chung chih* (蠢 種 紙), *yang pi chih* (洋皮紙), common *lu yin shen chih* (普通六印參紙), while paper made from straw is known as *keng pien* (坑 邊) *ming tsao* (名 糙), *ta fang* (大 坊), with coarse varieties known as *ta chih peng* (大 紙 篷), *hsi tsao chih* (細 草 紙), *tsao chih* (草 紙), *ta tou* (大 斗), *chung fang* (中 坊), *ta tou fang* (大 斗 坊), *hsiao chih peng* (小 紙 篷) *hou tou* (厚 斗), *san ting* (三 頂), *hsiao fang* (小 坊), *hsiao tou fang* (小 斗 坊), *chu tsao chih* (粗草紙), and *hsiang tou chih* (相 斗 紙).

Bambcos used in making paper are classified as *tsing kao* (青 高), *pai liao* (白 料), and *huang liao* (黃 料). The *tsing kao* is used for the manufacture of *yuan shu* (元 書), and *ching fang* (京 放) with *pai liao* for *lu ming* (鹿 鳴), *ching kao* (京 高), and *fang kao*, while the *huang liao* is used for maufacturing *huang yuan* (黃 元), *huang piao* (黃 參), *huang shao* (黃 燒), *tuan fang* (段 放), and *chin fang* (京 放). Papers made from tree bark are known as *shang pi chih* (桑皮紙), *tao hua chih* (桃 花 紙), *mien chih* (棉 紙), *shen pi chih* (參 皮 紙), while those made from rice-straw are known as coarse paper. The production of paper made from bamboo represents over

70 per cent of the total output, varieties made of rice-straw amounting to 26 per cent, those made from tree bark representing only 2 per cent of the total production.

METHOD OF MANUFACTURE.

The methods of making paper from bamboo, tree bark and rice-straw differ from each other, but generally the procedure is divided into two stages—preparation of raw material and manufacturing. In making paper from bamboo, the canes, after being pruned of leaves and shoots, are tied in bundles and steeped in a pond until the green skin is removed through maceration, when the canes are taken out of the pond and split lengthwise. The bamboos are then put in pits containing alternate layers of bamboos and lime, after which the pits are filled with water, and the bamboo left in soak for about two months. The bamboos are then taken out of the pit and soaked in clean water for another two months to wash out all traces of lime, after which the canes are reduced to fine pulp by pestling in a mortor or in a stone-mill operated by a water wheel or buffalo. The pulp is then mixed with cold water and spread in thin and even layers on large bamboo screens, and when half-dry the pulp is removed from the screen and pressed to squeeze out excess water before being dried in the sunshine or drying-over, when the sheets of paper are ready for use.

In making *pi chih* tree bark is used, obtained from branches cut during the winter. The branches are tied in bundles and steamed in a basin-like iron boiler for two hours. In order to prevent spoilage through over-heating, the bottom of the boiler is lined with board. After steaming the branches are taken out, the bark stripped off, and after being dried in the sun is again boiled in a lime solution until reduced to a past pulp, when the contents of the boiler are removed for bleaching, which usually takes several months. In the course of bleaching water is sprinkled on the bark from time to time to prevent it becoming too dry. The bleached material is then reduced to plup by pounding on a stone slab, and in order to make

the pulp cohesive, a of gum or mucilage extracted from the leaves of certain varieties of evergreen trees is added. Finally, the pulp is mixed with clean water and stirred with a wooden blade to insure evenness of mixture, and after this the milky pulp is turned into sheets of paper by being spread and dried on bamboo screens in the manner already described.

Tsao chih (草 紙) is a yellowish, coarse paper made from rice-straw. In being turned into pulp, the straw it first crushed and saturated with a strong lime solution, and buried in a trench. The pulp, after removal of its lime content by washing, is spread on a bamboo screen in thin layers, and dries into sheets of paper.

Among the various descriptions of paper produced in Hangchow *kang pien* (坑 邊) figures the largest with 4,400 million sheets, followed by *hou tou* (厚 斗) with 2,000 million sheets and *nan ping* third with 600,000,000 sheets. The production of *lu ming* (鹿 鳴), *hua tsien* (花 箋), *huang tsien* (黃 箋), *tsao chih* (草 紙), *ming tsao* (名 槽), and *san ting* (三 頂) amounts to over 300,000,000 sheets of each, with *tuan fang* (段 放), *hai fang* (海 放), *chang pien* (長 邊), *kuai tou chih* (塊 頭 紙), *fang kao* (方 高), *tou fang* (斗 方) *tsien chang* (千 張), *hsiao chih peng* (小 紙 篷) and *heng ta* (橫 大), each exceeding 100,000,000 sheets.

The annual production of papers amounts in value to $20,850,000 of which *huang pien* represents $3,000,000, followed by *nan ping* with $2,500,000 and *huo chien* with to $1,700,000. The production of *yuan shu* is valued at $1,400,000; *lu min* $1,300,000; *tou chih* (斗 紙) and *huang chien, each* $1,000,000. The total value for these seven varieties is about $12,000,000, representing half the total output. The production of *chin fang* is valued at $700,000; *hsiang shao chih* and *tsien chang* each $600,000; *hai fang*, $700,000; *fang kao*, $600,000, and *tou fang* and *tsao chih* $500,000, totalling $4,600,000. The following table shows the annual output different descriptions of paper:

		Production.	Value.
Huang Shao Chih	(黃燒紙)	2,854,875†	589,900
Chang Shan	(昌山)	13,710*	148,180
Chang Huang	(廠黃)	10,080*	60,480
Lu Ming	(鹿鳴)	304,800*	1,358,160
Ching Fang	(京放)	72,200*	715,360
Tuan Fang	(段放)	118,200*	592,500
Hai Fang	(海放)	230,580*	734,460
Lu Tsien Yuan Shu	(六千元書)	63,910*	686,600
Wu Tsien Yuan Shu	(五千元書)	55,960*	559,780
Yuan Shu	(元書)	16,964*	161,856
Ching Pien	(京邊)	26,880*	249,440
Chang Pien	(長邊)	106,000*	314,000
Chu Kao	(机高)	61,400*	272,300
Huang Chien	(黃箋)	206,800*	942,250
Huang Yuan	(黃元)	43,120*	176,800
Ta Ching Fang	(大京放)	12,000*	114,000
Lien Shih	(連史)	4,380*	37,380
Nan Ping	(南屏)	650 008‡	2,226,525
Hua Chien	(花箋)	350,476*	1,740,205
Fang Kao	(方高)	104,160‡	630,960
		2,400*	
Lien Chi	(連七)	47,640*	200,500
Huang Chih	(黃紙)	35,000*	77,950
		850†	
Mao Pien	(毛邊)	27,144*	425,992
		88,064§	
Ta Lien	(大連)	43,200†	30,240
Pao Hsin	(裱心)	7,000*	52,500
Hung Piao	(紅表)	1,140*	11,400
Tsien Chang	(千張)	285,800†	615,130
		109,200‡	
Chung Tsing Chih	(中青紙)	56,520†	56,520
Er Hsi Chih	(二細紙)	87,600†	148,800
Huang Ching Fang	(黃京放)	20,160*	181,440
Pai Chien	(白箋)	27,000*	108,000
Che Pien	(折邊)	51,840*	103,680
Moo Chueh Lien	(毛角連)	67,820*	101,730
Pan Che	(板折)	2,000*	9,000
Ping Chih	(屏紙)	20,520†	73,560
		7,680*	
Chiao Pai	(交白)	40,320*	56,448
Chien Liao	(眞料)	36,000§	21,600
Hsu Tsing	(徐青)	1,200*	19,200
Ma Tsing	(馬青)	1,200*	13,200
Hsin Chih	(信紙)	240**	1,440
Chi Ping	(溪屏)	40,320*	131,976
Sung Chih	(松紙)	16,700‡	108,700
Lien Wu	(連五)	2,520†	12,600
Ching Ping	(金屏)	25,620†	84,546
Lu Chü Chih	(六局紙)	53,280†	58,608

		Production.	Value.
Hung Ting	(紅 頂)	10,800†	3,240
Yiu Shen Chih	(印 堂 紙)	5,737*	43,732
Cha Siang Chih	(茶 箱 紙)	18*	387
Chang Lien	(長 連)	1,274*	2,293
Pu Chih	(譜 紙)	348*	1,635
Hsiao Pai Chih	(小 白 紙)	1,200*	1,440
Chih Yuan Chih	(溪 源 紙)	315*	1,260
Shao Chih	(燒 紙)	3,900*	5,460
Kong Pien	(坑 邊)	4,558,720†	3,006,849
Hou Tou	(厚 斗)	2,359,200†	825,450
Ta Tsao Chih	(大 草 紙)	5,500‡	11,000
		1,521*	
Tsao Chih	(草 紙)	45,600‡	47,664
		19,480†	
Tou Fang	(斗 坊)	164,668*	212,636
Chan Chung Chih	(顫 稱 紙)	370†	3,700
Chen Pi	(眞 皮)	12,000§	1,800
Yu Chih	(油 紙)	1,200‡	180
Tao Hua Chih	(桃 花 紙)	5,904***	69,793
Sheng Pi Chih	(棠 皮 紙)	232*	3,681
Mao Chang	(毛 昌)	1,000†	2,800
Kuao Tou Chih	(塊 頭 紙)	180,000*	21,600
Ya Tou Chih	(押 頭 紙)	19,200*	30,720
Heng Ta	(橫 大)	137,030†	47,834
Chang Tou	(昌 斗)	43,750†	14,025
Pan Chien	(板 箋)	3,000*	9,000
Kiang Chien	(江 箋)	1,500*	5,250

†塊 *件 ‡担 §刀 **令 ***條

The output of paper made from bamboo amounts annually to the value of about $14,955,000. representing 71.7 per cent of the total paper production in Chekiang, followed by *tsao chih* (草紙) with $5,403,000, representing 26 per cent, while *pi chih* (皮紙) with $491,734 represents 2.3 per cent of the entire output. Among the papers made from bamboo *ta ching fang* (大京方), *mao tai* (毛泰), *lien shih* (連史), *sung pien* (松邊), *mao pien* (毛邊), *hai fang* (海放), *yuan shu* (元書), *wu tsien* (五千), *lu tsien* (六千), *piao sing* (表心), *huang yuan* (黃元), *tuan fang* (段放), *chu chien* (粗箋), *chu kao* (粗高), *fang kao* (方高), *chang shan* (昌山), *huang chien* (黃箋), *pai chien* (白箋), *lu ming* (鹿鳴), *cha pai* (茶白) are most in demand. The *ta ching fang* is usually cut into nine *tao* (刀) of 200 sheets each. A *chien* (件) of *ta chin fang* costs $5 to make and fetches $10 on the market; it is largely used locally, and in Kiangsu and the Yangtse Valley.

The cost of making one *chien* (件) of *mao tai* (毛泰), is $4 but the market price ranges from $7 to $8; this variety is largely used by printers, the principal markets being in Kiangsu and Chekiang. The *lien shih* is made of bamboo grown in Kiangsi, and costs $18 per *chien* (件) to make; it is used largely for making fans and stationary, the principal markets including Kiangsu, Chekiang, Shantung, and Anhui. *Sung pien* is sold at $8 to $10 a *chien* containing 9 *tao*. The best grade of *mao pien* is produced in Fukien, each chien containing 6¼ *tou*, and is commonly known as *lu wu mao pien* (六五毛邊). The *mao pien* made in Chekiang is smaller in size and inferior in quality compared with the Fukien product. A *chien* of the larger size contains 1,000 sheets, while the smaller size contains 13 *tou*. Both varieties are largely used locally. A *chien* of *hai fang* contains 40 *tao*, and is sold at $3 or $4. The *yuan shu* (元書) or *pai chih* (白紙) is produced at Fuyang, Kiangnan (江南) and Toshanhsiang (多山鄉), but the paper made at Ta Yuan (大源) is the most popular. A *chien* of this variety has 46 *tou*, and is sold at from $9 to $12, being used for writing. A *chien* of the *wu chien* and *lu tsien* contains 50 *tou*, sold at $10. In addition to being largely used in Kiangsu and Chekiang this paper is also marketed in Shantung and Hopei. The *pieu hsin chih* (表心紙) is made on the upper reaches of the Chien Tang River, and put up into *chien* of from 50 to 70 *tou* each, selling at $5 or $7. In addition to being sold on the Kiangsu and Chekiang markets, this paper is also exported to Kiukiang, Hankow, Tsingtao, and Tientsin. The *chang shan* has 80 *tao* per *chien*, sells at $10, and is used for wrapping. *Huang chien* (黃箋), *pai chien* (白箋), and *cha pai* (茶白) are made of *Huang liao*, and *pai liao*. The *hwang chien* is divided into two varieties, known as 91 and 81, the latter being smaller and fetching a cheaper price. The 91 variety is sold at $6 a *chien*, while the price of the 81 variety is $2. *Cha pai* is a kind of *pai chien* (白箋), made from straw, and is used in making offerings to the dead, hence is also known as *shao chih* (燒紙), *huang shao chih* (黃燒紙) or *tsien chang* (千張). All these are sold in Sungking, Chating, Yangchow, and Huanan, and the annual export of this paper from Wenchow amounts to 90,000 piculs.

Tsao chih is produced very largely in Fuyang, Tunglu, and Yuhang, and is classified into coarse and fine qualities. The former is used for wrapping, while the latter is used for toilet-paper. The coarsest variety is called *chih chin* (紙筋), and is used to make a sort of mortar by mixing with lime.

The *pi chih* (皮紙) is widely used and among the many different varieties the most important are *shang pi chih* (桑皮紙), *yang pi chih* (洋皮紙), and *huang chuan shan pi* (黃川傘皮), The *shang pi* is light brown in color, and is used for wrapping up coins and silk. The price per *chien* of 17 or 18 *tou* is about $10. During recent years the popularity of the *shan pi chih* has been usurped by the *yang niu pi chih* (洋牛皮紙). *Shan pi chih* is made in large quantities in Yühang. Formerly this paper was largely made at Tsangchienchen (倉前鎮), to the annual figure of over 10,000 piculs. but owing to the competition of *yang chih* production has been curtailed. There are two other varieties known as *pai mien chih* (白棉紙) and *chu mien chih* (糙棉紙). *Yang pi chih*, also known *ai kuo chih* (愛國紙) is made at Fuyang, and contains from 80 to 100 tao of 100 sheets per *chien*. These papers are used for wrapping silk waste. and are sold at $40 for the best and $30 for inferior grades. The variety made from straw is known as *tsao shang pi chih* (草桑皮紙), and the other kind is called *tsao tan chia chung chih pi* (草單加重皮紙), sold at from $13 to $15 a picul. *Kung chuan* (貢川) is another high-class paper, other names used being *chu kung* (衢貢) and *kao kung* (高貢). The *chu kung* is made into a *chien* of 46 *tao*, while *kao kung* is made into 100 *tao* of 100 sheets each, sold at $50 per *chien*. *Shan pi* (傘皮) is the thinnest paper of the *pi chih* variety, the raw material being a mixture of *yen pi* (雁皮) and *chu pi* (楮皮). These papers are used principally for making umbrella and lanterns, and the principal markets are Chuchow, Yungchia and Hangchow.

In the Customs returns paper exported from Chekiang is classified as best, medium, poor, and miscellaneous. Of the three grades mentioned poor quality paper represented the largest share of the trade, followed by medium grade.

The following table shows the export of paper during 1929, 1930 and 1931 as recorded in Chekiang Customs returns:—

1929

	Hangchow	Ningpo	Wenchow
Value in Picul			
Best	1,545	27	2
Medium	9,201	120	136
Poor	37,274	16,171	28,374
Other	—	—	—
Hk. Tls.			
Best	40,943	540	40
Medium	82,809	960	1,632
Poor	167,733	64,684	226,992
Others	1,843	186	120

1930

	Hangchow	Ningpo	Wenchow
Value in Picul			
Best	1,211	23	7
Medium	14,217	38	90
Poor	50,162	19,005	36,495
Other	—	—	—
Hk. Tls.			
Best	30,881	460	105
Medium	131,507	304	1,080
Poor	220,713	76,020	291,960
Others	49,948	125	—

1931

	Hangchow	Ningpo	Wenchow
Value in Picul			
Best	155	16	175
Medium	9,108	73	523
Poor	29,962	10,604	63,392
Other	—	—	—
Hk. Tls.			
Best	3,720	320	2,625
Medium	81,972	594	5,230
Poor	134,829	42,416	316,960
Others	1,005	127	277

TRADING METHODS

In Chekiang paper manufacturers are known as *tsao hu* (槽戶) while establishments doing retail or wholesale business in paper are known as *chih hong* (紙行) or *chih po chuan* (紙箔莊). The manufacturing centre is at Hushu (湖墅), and makers usually go to Hangchow to sell their goods to *chih hong* (紙行), though sometimes buying agents go to the producing districts and buy paper direct from the manufacturers. There are 24,437 persons engaged in making paper, scattered over 43 *hsien* districts.

The papers made in the vicinity of the upper Chien Tang valley centers around Hangchow for distribution, while paper produced in Yuhang, Lingan, Yutsien and Fuyang have Yuhang as their main centre of distribution.

According to reports compiled in 1933 the paper agents operating in Hangchow number 117, of which 101 are managed under individual ownership, with 16 partnerships. The aggregate capital of there concerns amounts to $274,-660, with an annual business turnover of $5,442,750. Establishments having a turnover amounting to $50,000 are Kung-Sin (公信), Kung I (公益), Kung Shun (公順), Shen K'ang (愼康), Yü Chang Lung (裕長隆), Ying Feng Jun (盈豐潤), Hsiang Lung (祥倫), Kuang Hua (光華), Chih Cheng (志成), Chien Tai Chang (謙泰昌), Tung Kang (同康), Lung Tai Chang (隆泰昌), Huan Yun Ko (環雲閣), San Tai Chang (三泰昶), Heng Hsin (恆新), Tung Fu Heng (同福恆), Tai Ho (泰和), Li Yuan Hsiang (利源祥), Chen Feng (振豐), Hui Ho (滙和), Lun Yuan (綸源), Fu Yuan (復源), Ching Cheng Tsun Chi (慶成泰記) and Chien Tai (謙泰). The turnover of the other 94 agents amounted to $1,382,750. The following is a list of the principal agents operating in Hangchow:—

		Capital	Turnover (1931)
Kung Hsin	(公信)	$14,000	$520,000
Kung I	(公益)	7,500	450,000
Kung Shun	(公順)	7,800	410,000
Shen Kong	(愼康)	9,000	400,000
Yü Chang Lung	(裕長隆)	30,000	320,000
Ying Feng Jun	(盈豐潤)	10,000	265,000

	Capital	Turnover (1931)
Hsiang Lun Kuang Hua (祥綸光華)	10,000	210,000
Sih Cheng (志 成)	8,000	170,000
Chien Tai Chang (謙泰昌)	8,000	165,000
Tung Kong (同 康)	700	150,000
Lung Tai Chang (隆泰昌)	2,000	130,000
Kuan Yun Ko (環雲閣)	10,000	120,000
San Tai Chang (三泰祥)	2,000	100,000
Heng Hsin (恆 新)	1,000	80,000
Tung Fu Heng (同福恆)	3,000	80,000
Tai Ho (泰 和)	1,000	75,000
Li Yuan Hsiang (利源祥)	2,000	70,000
Chen Feng (振 豐)	3,000	70,000
Wui Ho (滙 和)	5,000	60,000
Lung Yuan (倫 源)	2,000	60,000
Fu Yuan (復 源)	3,000	55,000
Ching Cheng Tsun Chi (慶成尊記)	2,000	50,000
Chien Tai (謙 泰)	1,000	50,000
Others 94 establishments	132,660	1,382,750
Total	274,660	5,442,750

In Yühang there are 29 paper agents, and according to statistics compiled by the Business Tax Bureau (營業稅局) their business turnover in 1931 amounted to $1,127,488. Establishments having a turnover of over $100,000 are Kung Yuan (公源) and Chi Ho (嘉禾); over $90,000, Jin Hsin Chang (日新昌); over $80,000, Ting Chang (鼎昌); over $70,000 Sun Tung Chang (孫同昌), and Shih Mao Chang (史茂昌); over $60,000 Wan Yuan (萬源) and Mao Chang Yuan (茂昌源) while for the remainder the annual turnover varies from $4,000 to $6,000. The following is a list of agents in Yuhang:—

	Turnover (1931)
Kung Yuan ..... (公 源)	110,000
Chia Lai ..... (嘉 來)	115,000
Wu Heng Tai ..... (吳 恆 泰)	34,688
Wan Yuan ..... (萬 源)	60,000
Tai Ho Shen Che ..... (泰和愼記)	48,000
Tai Ho Sheng Chi ..... (泰和生記.	15,000
Ting Chang ..... (鼎 昌)	85,000
Hsu Tung Fai Li Chi ..... (徐同泰立記)	4,000

		Turnover (1931)
Yuan Ta Lun	(元大綸)	56,000
Sun Tung Chang	(孫同昌)	70,000
Ta Tung	(大同)	48,000
Yung Yu	(湧餘)	39,000
Zih Hsin Chang Fa Chi	(日新昌發記)	91,000
Hsing Chang	(性昌)	20,000
Shih Mao Chang	(史茂昌)	70,000
Kung Hsing	(公興)	5,000
Kung Li	(公立)	4,000
Chia Chi	(洽記)	18,000
Mao Chang Yuan	(茂昌源)	60,000
Hsia Kung Chi	(夏公記)	15,000
Tsai Hsiang Chi	(蔡祥記)	6,000
Yu Lung	(餘隆)	20,000
Shen Ta	(慎大)	15,000
Wang Yang Yu	(王永裕)	30,000
Wang Shu Chi	(王舜記)	40,000
Yuan Ta Shan	(元大順)	12,000
Chu Hsi Feng	(朱錫豐)	10,000
Hsieh Yuan Hong	(協源行)	16,800
Tsai Hsin Feng Ho Chi	(蔡新豐合記)	30,000
Total		1,127,488

Fuyang is the chief paper-making district in Chekiang, having 15 agents, of whom 11 are operated as partnerships. The aggregate capital amounts $16,200, and in 1929 the business turnover amounted to $435,000, with 409,000 and $387,000 for 1930 and 1931 respectively. The following is a list of agents, operating in Fuyang with then capital and other particulars:

			Capital	Business Turnover 1929	1930	1931
I Sheng Fu	(怡牲福)	1931	800	20,000	20,000	18,000
Yu Yuan	(餘元)	1924	1,000	40,000	37,000	35,000
Kuang Yuen Ho	(廣源合)	1920	1,200	39,000	40,000	38,000
Shen Ta	(慎達)	1923	1,600	21,000	19,000	18,000
Yung Yuan	(永源)	1929	500	19,000	19,000	18,000
Tung Yu Sheng Chi	(同裕盛記)	1926	800	29,000	27,000	25,000
Ting Ho	(鼎和)	1922	1,200	40,000	39,000	35,000
Chen Ho	(振和)	1921	1,500	41,000	39,000	38,000
Chin Hua	(久華)	1927	1,500	40,000	37,000	36,000
Ta Cheng	(大成)	1927	2,000	40,000	40,000	38,000
Wei Tung	(惠通)	1931	1,500	35,000	30,000	28,000
Hsin Tiang	(新祥)	1929	500	23,000	19,000	18,000
Chang Jen	(怡昌仁)	1929	1,000	18,000	16,000	15,000
Yu Tai	(裕泰)	1930	500	16,000	18,000	18,000
Chen Lung	(陳隆)	1928	600	14,000	9,000	9,000
Total		——	16,200	435,000	409,000	387,000

Ninghsien, Yungchia and Haimen are other places where paper agents are established, but compared with those mentioned above they are less important.

Paper marketed in Hangchow includes *hua chien* (花箋), *huang chien* (黃箋), *pai chien* (白箋), *hai fang* (海放), *ching fang* (京放), *fang kao* (方高), *nan ping* (南屏), *mao pien* (毛邊), *huang yuan* (黃元), *tsao chih* (草紙) *lien shih* (連史) and *mao tai* (毛泰). These different varieties are distributed to buyers in Tientsin, Shantung, Pukow, Tsingtao, and Kiangsu.

Among the papers marketed at Fuyang the most important are *keng pien* (坑邊), and *yuan shu* (元書), which find markets in various districts of Kiangsu and Chekiang. Paper handled in Yuhang includes *yuan shu* (元書), *kao pai* (高白), *Chu Kao* (粗高), *fang kao* (方高), *hai fang* (海放), *yu pai* (油胚), *se ti* (色低), *shang pi* (參皮), and *tsun pi* (春皮). Ningpo produces no paper, and gets its supplies from Ch'ühsien, Lungyu, Kiangshan, Yungk'ung, Fenghua, Tsungan, Linghai and Chuchi the varieties found on this market being *chang ping* (長屏), *hua chien* (花箋), *fang kao* (方高), *lung ping* (龍屏), *chun wen* (中文), *ta yuan* (大元), *mao tai* (毛泰), *mao lu* (毛六), *hai chih* (海紙), and *lu ming* (鹿鳴). The places when these supplies are sent include Hopei, Shantung, Newchwang, Dairen, Kiangsu, Chenhai, and Tsingtac. Paper sold in Haimen comes from Huangyen and Linhai, while in Yungchia paper is imported from Lungch'uan (龍泉); Taishun the varieties including *tsien chang* (千張), *chu chih* (粗紙), *hsiao chih* (小紙), *ta fang* (大方), and *hsiao fang* (小方). In Yungchia district the most common varieties of paper are *chih tao mao pien* (七刀毛邊), *chiu tao mao pien* (九刀毛邊), and *hua chien* (花箋).

CHAPTER XX

SOAP-MAKING

BEFORE the introduction of imported soap into China, the needs of the public were served by native manufacturers who made soap from pods of the soap tree (*Gleditschia japonica*), which grows abundantly in many parts of the country. When the use of imported soap became more general, several factories were established in Chekiang, and among the earliest of these the most important were the Feng Ho (豐和), Hangchow, and Kuang Ming (光明), Ninghsien. In 1912 the Kuang Hua Soap Manufacturing Company (光華) was started at Hsiashih (硤石), and factories subsequently established included Mei Heng (美亨), Hangchow, Ta Hsing (大興), Feng Shan Men (凰山門), Ta Li (大利), Che Chia Chiao (車家橋), Chen Hua (振華), Chin Ts'ai Tai Lane (金釵袋巷), and Yu Tung (裕通), Wan An Chiao (萬安橋). At Ninghsien, in addition to the Kuang Ming the Yung Ming (永明) factory was established in 1922, T'ai Feng (泰豐) in 1924, Ta Mao (大茂) in 1925, Yung Feng (永豐) in 1927, and Chuan Mao (全茂) in 1928. In Yungchia the Mao Sheng (茂生) was established in 1919 at Yu Feng Chiao (漁豐橋), and works subsequently opened included the Kung Hsin (公新), Hua Mei (華美), Hsiang Ya (香亞) and T'ai Fu (泰孚).

The soap industry of Chekiang is centered in Hangchow, Ninghsien and Yungchia, with some small concerns in Haining, Chiahsing, Ch'enghsien, Linhai, Huangyen, Chinhua, Tungyang, Yungk'ang and Ch'ühsien.

Of the 30 soap factories operating in Chekiang, six are in Hangchow and Ninghsien. Details of these concerns are shown in the following table:—

Factory		Capital	Ownership	Established	Worker
Feng Ho	(豐 和)	$6,400	Private	1904	9
Mei Heng	(美 亨)	10,000	Partnership	——	12
Ta Hsing	(大 興)	5,000	„	——	7
Ta Li	(大 利)	8,000	„	——	12
Chen Hua	(振 華)	3,500	Private	——	8
Yü T'ung	(裕 通)	5,000	Partnership	1932	8
Kuang Hua	(光 華)	10,000	„	1912	5
Ts'ing Hua	(清 華)	1,000	„	1931	4
Yuan Hu	(鴛 湖)	3,000	„	1924	6
T'ai Feng	(泰 豐)	3,000	„	1924	9
Ch'uan Mao	(全 茂)	7,800	„	1928	13
Ta Mao	(大 茂)	2,000	Private	1925	7
Yung Feng	(永 豐)	4,400	Partnership	1927	13
Kuang Ming	(光 明)	15,000	Ltd., Co.	1908	30
Yung Ming Shih	(永明氏)	3,000	Private	1922	13
Ssu Ta	(四 達)	16,000	Partnership	1928	20
Ch'uan Feng	(泉 豐)	10,000	„	1927	8
Cheng Ta	(正 大)	4,000	„	1916	8
Chung Ho	(中 和)	1,500	Private	1925	2
Hsin Ta	(信 大)	2,000	„	1925	2
Li Hua	(利 華)	6,000	Partnership	1922	5
Ku Chung	(固 中)	1,000	„	1926	1
T'ien Mu	(天 目)	2,500	„	1924	3
Li Sheng	(利 生)	600	„	1932	1
Ta Ho Li Chi	(大和立記)	3,000	Private	1921	15
Kung Hsin	(公 新)	7,000	Partnership	1920	7
Mao Sheng	(茂 生)	3,000	Private	1919	4
Hsiang Ya	(香 亞)	2,000	Partnership	1928	3
T'ai Fu	(泰 孚)	1,500	„	1930	4
Hua Mao	(華 茂)	4,000	„	1923	4
TOTAL.....		.151,200			106

The total capital invested in the soap business in Chekiang amounts to $151,200, the establishments having capital of from $15,000 to $16,000 numbering three; from $5,000 to $8,000, seven; and from $1,000 to $5,000, 17; with one having the modest capital of $600.

The workers employed vary from 15 to 1, and the active working period is nine months, operations being suspended during the winter. In Yungchia and Ch'ühsien the highest wage is 26 cents a day and the lowest 16 cents, and monthly rates vary from $8 to $5. In Hangchow and Chiahsing the workers are paid monthly, ranging from $8 to $32. In each factory the trained and expert employees receive about double the amount paid to unskilled workers.

The Ta Ming (大明) factory at Ningpo and the Ssu Ming (四明) factory at Kiangtung (江東) have suspended operations owing to financial difficulties.

SUPPLIES OF RAW MATERIAL

The raw materials used for making soap include beef and mutton tallow, vegetable tallow, camphor oil, rapeseed oil, coconut oil, essential oils, soda, and alcohol. Mutton tallow is obtained locally at about $20 per picul; beef tallow is not so widely used, costing $30 a picul. Vegetable tallow is abundant in the western part of Chekiang, being also used for making candles and fetches $40 a picul. Camphor oil is produced largely in the eastern part of the province, while essential oils are imported from France. Soda is imported from Great Britain, Germany and France, and is also manufactured by the Yung Li Company (永利), at Tangku (塘沽) and the Tien Yuan Chemical Works (天原電化廠), Shanghai, the price being about $84 a barrel. Alcohol is obtained from Java and Malaya.

PRODUCTION

The method of making soap is very simple. After melting the fats in an iron pan, soda and other ingredients are added, and after boiling for eight hours the mixture is left to cool, and then cut into blocks, ready for packing in wooden boxes.

The annual production of soap is estimated at 187,450 boxes, valued at $1,010,000, but this figure does not include the output at Yu Tung (裕通), Cheng Ta (正大), and Ta Ho Li Chi (大和立記). The following is a list of soap factories, with quantity and value of output:—

	Boxes	Value
Feng Ho	8,000	$44,000
Mei Heng	15,000	82,500
Ta Hsing	9,000	49,500
Ta Li	12,400	68,200
Chen Hua	5,600	30,800
Kuang Hua	3,600	19,800

	Boxes	Value
Tsing Hua	300	$ 1,650
Yuan Hu	2,500	13,750
Tai Feng	7,000	38,500
Chuan Mao	14,000	77,000
Ta Mao	7,000	38,500
Yung Feng	8,000	44,000
Kuang Ming	10,000	55,000
Yung Ming Shih	10,000	55,000
Ssu Ta	30,000	160,000
Chuan Feng	8,000	44,000
Chung Ho	600	4,000
Hsin Ta	1,500	6,500
Li Hua	5,000	27,500
Ku Chung	2,500	12,500
Tien Mu	800	4,000
Li Sheng	250	1,350
Kung Hsin	10.000	50,000
Mao Sheng	6,000	30,000
Tai Fu	3,000	15,000
Hsiang Ya	3,500	17,500
Hua Mao	6,000	30,000
Total.....	189,550	1,020,550

SALE AND DISTRIBUTION

The soap made in Chekiang is consumed locally with the exception of supplies from Haining and Chiahsing, which also find their way to Kiangsu, while soap made in Hangchow is distributed in the Upper Chientang Valley, including Chinhua, Ch'üchow, Yenchow and Shaohsing. Soap made in Ch'enghsien is marketed in Hsinch'ang, while the chief markets for soap manufactured by Li Hua (利華), and Ku Chung (固 中) are Wui, Yungk'ang, and Tungyang. In other places the production is consumed locally. The best seasons for marketing soap are summer and autumn, followed by spring. Owing to the keen competition of imported soap, the industry in Chekiang has declined considerably.

CHAPTER XXI

CANDLE-MAKING

CANDLE factories established in Hangchow are the Mei Heng (美亨), Sheng Yueh (勝月), and Nan Yang (南陽). The Mei Heng Factory is established at Hui An Chiao (會安橋), Hushih (湖墅), capitalized at $8,000, and turning out 16,000 boxes of candles annually, valued at $44,000. The Sheng Yueh factory is established in Hangchow Road (杭州路), Kungchenchiao (拱宸橋), a commercial center near Hangchow, capitalized at $4,000, and producing annually 3,000 boxes, valued at $9,000. The Nan Yang factory, of Juian, was established in 1923 at Kiang Ya Lane (江衙巷), capitalized at $5,000 with an annual output of 750 boxes, valued at $2,480.

The raw material used in making candles consists of paraffin, stearin, and cotton-braid. Paraffin and stearin come from abroad while the cotton braid is obtained locally. The price for paraffin varies from $20 to $28 a picul, while that for stearin is about $68. The cotton-braid, used for making wicks, is of 30 different counts, varying in size, fineness, and price. Counts between 18 and 30 fetch from $4 to $8 a bale; 11 to 16 counts, from $2 to $4; 4 to 10 counts, $1 to $2, while for 3 counts the price is about $1.

The equipment of candle factories is simple while the method of manufacturing is not complicated. The usual procedure is to mix stearin with paraffin and boiling the mixture until it reaches the proper consistency, when it is poured into moulds.

The output is taken up by local demand. The annual production from the three factories amounts to 19,700 boxes of 25 packages of 6 candles each. The trade marks on the products of the Mei Heng Factory are Peh Lu (百祿), Pai Jih (白日), Tai Yang (太陽), Tai Yang Chu (太陽燭) and Wei Sheng Ts'ai Chu (衛生彩燭), prices varying from $3.80 to $5.20 a box. Candles turned out by the Sheng Yueh Factories include the "Tiger," "Old Tree," "Eagle" and "Three Star" brands, the price being the same as those of the Mei Heng factory. The product of the Nan Yang factory are marked with "Hand," "Great Happiness," "Red Star," and "Double Dragon", selling at from $2.90 to $3.50 a box.

CHAPTER XXII

LACQUER

AMONG lacquer-producing provinces Szechuan and Hupeh rank first, followed by Shensi, Honan, Kuichow, and Hunan. Chekiang does not produce any lacquer-ware, but some of the materials needed for the manufacture of lacquer are abundant in many districts, including Kiangshan, K'aihua, Lanch'i, Tungyang, Iwu, Chienteh, Fenshui, T'unglu, Sungyang, Lungch'uan, Shuian, P'ingyang, Yuchien, Ch'anghua, and Chuchi.

In Ninghsien 21 lacquer factories are operating, capitalized at from $150 to $6,000, apportioned as follows: below $500, 5; $500 to $1,000, 1; $1,000 to $3,000, 7; $3,000 to $5,000, 6; $5.000, 1; and $6,000, 1, the aggregate capital amounting to $70,180. In Yungchia district there are 8 factories, capitalized at $3,800; details as shown in the following tables:—

NINGHSIEN

Factory	Location	Capital
Chou Yu Hsin	(周裕新)Kuan Ch'iao T'ou (貫橋頭)	$2,000
Chou Heng Sheng Tsun Chi	(周恒昇駿記)Hsiao Kiang Ch'iao (小江橋)	3,000
Chou Heng Mao	(周恒茂)Kung Ch'ien (宮前)	3,000
Chou Heng Sheng	(周恒生)Tung Hsing Street (同興街)	1,000
Wu Teh Lung	(吳德隆)Ta Chi T'ou (大契頭)	1,000
Chou Heng Sheng Yin Chi	(周恒昇寅記)Tung Ta Road (東大路)	5,000
Chou Heng Li	(周恒利)Kiang Tung Hui Street (江東灰街)	3,000
Chou Heng Yu	(周恒豫)Ta Chieh T'ou (大街頭)	3,000
Wu Teh T'ai	(吳德泰)Tsai Shih St. (菜市街)	3,000
Chou Cheng T'ai	(周成泰)Ling Chiao Men (靈橋門)	6,000
Wang Heng T'ai	(王恒泰)Ling Chiao Men	500
Chou T'ien T'ai	(周天泰)Shui Kuan Ch'iao (稅關橋)	1,000
Wu Yu Hsing	(吳豫興)Ch'a Yuan Ch'ien (察院前)	300
Chou Ch'ang Chi	(周長吉)Outside West Gate (西門外)	1,000
Chou Jung Ta	(周榮大)Hsiao Chiao Ch'ang K'ou (小教場口)	150
Hsin Yu Ta	(新裕大)Ku Lou Ch'ien (鼓樓前)	400
Wu Ch'ang Hsin	(吳長新)Kiang Tung Ta St. (江東大街)	2,000
Chou Jui Cheng	(周瑞成)Tung Hsing St. (同興街)	1,000
Chang Chih Ta	(張志大)Kiang Pei Bank (江北岸)	400
Chou Li Ho	(周利和)Kung Ch'ien (宮前)	3,200
Yung Cheng	(永成)Outside West Gate (西門外)	180
	TOTAL.....	$40,030

YUNGCHIA

Factory	Location		Capital
T'ien Sheng Hsiang	(天生祥)Pao Ning Tien	(保寧殿)	$500
Hsin I Sheng	(新益盛)Shui Ku T'ou	(水屈頭)	200
Hsin Chu Sheng	(新聚盛)Wen Hsiang Lane	(蚊巷巷)	300
Ta Hsing	(大興)Nan Ta Street	(南大街)	500
Kung Hsing	(公興)Nan Ta Street	(南街大)	500
Ling Chu Fa	(林聚發)Ts'ang Ho Lane	(倉河巷)	500
Ma Feng Yu	(馬豐裕)Hsiao Nan Ta Street	(小南大街)	800
Ch'eng Ho Ch'eng	(程和成)Hsiao Nan Ta Street	(小南大街)	500
	TOTAL.....		$3,800

The raw materials used in making lacquer may be divided into main and auxiliary supplies—the former being *chien shih* (建始漆), *mao pa* (毛垻漆) *ta ning* (大寧漆), *wan chu* (萬足漆), *lung t'an* (龍潭漆), *ta mu* (大木), *yu tsu* (油子), *p'ing li* (平利) and *yun yang* (鄖陽). The *chien shih* lacquer is produced at Chienshih (建始), Tsukui (秭歸), Ch'angyang (長陽), Ch'angloh (長樂) Patung (巴東), Hofeng (鶴峯), of Hupeh province, while *mao pa* is made at Hsuanteh (宣德), Lich'uan (利川), Hsienfeng (咸豐), Laifeng (來凰), and Enshih (恩施), also of Hupeh province. *Ta ning* lacquer comes from Taning (大寧) and Hsinghua (興化), Szechuan province, while *wan chu* comes from Chungking. *Lungt'an* lacquer is found at Yuyang (酉陽), Szechuan province, while *ta mu* and *yu tsu* lacquer are obtained from Tung-*k'ang* (東康), Shensi province, and districts bordering Honan. *P'ing li* and *Yunyang* lacquer come from Ping Li (平利), Yunyang (鄖陽), and Tu Ho (徒河), Hupeh province. Places where auxiliary materials are found include Lanch'i, Iwu, Tungyang, Yenchow, Chienteh, Fenshui, T'unglu, Sungyang, Lungch'uan, Shuian, P'ingyang, Yüch'ien, Ch'anghua, and Chuchi.

PRODUCTION

The value of the annual production of lacquer in Chekiang, according to the most recent statistics, is as follows:

NINGHSIEN

Chou Yu Hsin	$10,500
Chou Heng Mao	8,000
Wu Teh Lung	2,500
Wu Heng Li	19,600
Wu Teh T'ai	11,200
Chou Heng Sheng Tsun Chi	12,900
Chou Heng Sheng	8,400
Chou Heng Sheng Yin Chi	18,200
Chou Heng Yu	13,500
Chou Cheng T'ai	23,000
Wang Heng T'ai	5,600
Wu Yu Hsing	1,010
Chou Jung Ta	6,000
Wu Chang Hsing	6,700
Chang Chih Ta	1,050
Yung Cheng	1,000
Chou T'ien T'ai	1,260
Chou Chang Chi	3,300
Hsin Yu Ta	1,400
Chou Jui Cheng	9,000
Chou Li Ho	11,200
TOTAL	$175,320

YUNGCHIA

Tien Sun Hsiang	$3,300
Hsin I Sheng	1,000
Hsin Chu Shun	1,500
Kung Hsing	15,815
Ta Hsing	15,127
Ling Chu Fa	2,000
Ma Feng Yu	9,000
Cheng Ho Cheng	5,578
TOTAL	$53,320

Lacquer manufactured in Chekiang finds its principal markets—outside local demand—in Shanghai, Hankow, and Foochow. Raw lacquer comes principally from Hankow, which is also the chief distributing centre for the finished product. In order to extend their business several Chekiang merchants established a factory in Shanghai to make lacquer, but owing to the keen competition of imported goods, the production of Chekiang lacquer has been considerably curtailed.

CHAPTER XXIII

LEATHER TANNING

THE FIRST tannery in Chekiang was established at Yungchia, where there are now 26 factories. In the early years tanning was not conducted as an independent business, but was done by the concerns making leather goods to meet their own requirements. In Hangchow, the first tannery was opened by Shen Teh Shun (沈德順), and engaged solely in the preparation of hides. There are now 52 tanneries in Chekiang, 24 in Hangchow, 26 in Yungchia, and 2 in Chenghsien. Most of these concerns are owned by individual proprietors, with some operated as partnerships, while only a few are incorporated. Their capital is small, ranging from a few hundred dollars to $10,000, and the total capital of the 52 tanneries in the Province is only about $100,000, while the amount of business done annually is estimated at about $884,000. The tanneries now operating in the Province are as follows:—

LEATHER TANNERIES IN CHEKIANG

Tanneries		Capital
Hangchow Leather Co.	(杭州皮革公司)	$7.000
Yü Hao	(裕號)	5,000
Ts'ui Lung	(萃隆)	4.200
Shen Teh Shun	(沈德順)	4.000
T'ung Mao Feng	(同茂豐)	4.000
Heng Chang	(恒昌)	3.500
Wu Lin	(武林)	3.000
Yeh Cheng Mao	(葉正茂)	3.000
Yung Shun T'ai	(永順泰)	3.000
T'ung I Kung	(通益公)	3.000
Hsin Ch'ang	(信昌)	2 000
Hua Lin	(華林)	2 000
Hua Sheng	(華盛)	1,800
Ts'ing T'ai	(清泰)	1,500
Ho Feng	(和豐)	1,400
Hsieh Mao	(協茂)	1.200
Hsieh Yuan Ch'ang	(協源昌)	1,200
Chen Yuan Ch'ang	(陳源昌)	1,000
T'ung T'ai	(同泰)	1,000
Fu Ch'ang Ming Chi	(復昌明記)	500

Tanneries		Capital
Feng Shan	(鳳 山)	400
Yuan Ch'eng	(圓 成)	400
Mao A Niu	(毛 阿 牛)	400
Ch'en Cheng Ho	(陳 正 和)	300
Total		54,800

YUNGCHIA

Tanneries		Capital
Chin Hsin	(晉 新)	$15,000
P'u Ta	(普 達)	10,000
Tsing Hua	(精 華)	7,000
Kung I	(公 益)	1,000
I Yung Shun	(伊 永 順)	1,000
Li Shun Fa	(李 順 發)	1,000
Chin Teh Sheng	(金 德 盛)	800
Yeh Chin Fa	(葉 進 發)	700
Chin Teh Shang Lu Chi	(金德盛祿記)	700
Ch'eng Shen Fa	(程 順 發)	700
Ma Tseng Chi	(馬 增 記)	700
Ch'en Ho Fa	(陳 合 發)	500
Chang Ho Feng	(張 合 豐)	500
Ch'en Kuang Sheng	(陳 廣 盛)	500
Liu Chin Hsin	(劉 進 興)	500
Ch'en Yuan Sheng	(陳 源 盛)	500
Hu Yuan Shun	(胡 源 順)	500
Chin Leh Shun Li Chi	(金德順禮記)	500
Chin Lung Chang	(金 隆 昌)	500
Chin Teh Shun Er Fang	(金德順二房)	500
Ch'en Chin Hsing	(陳 進 興)	—
Ho Shun	(合 順)	—
Ch'en Hsieh Fa	(陳 協 發)	—
Ling Shen Fa	(凌 森 發)	—
Ch'en Lung Hsing	(陳 隆 興)	—
Cheng Chin Fa	(鄭 進 發)	—
Total		43,100

CH'ENGHSIEN

Tanneries		Capital
Kai Yuan	(開 源)	$1,000
Wu Wan Sheng	(吳 萬 盛)	1,000
Total		2,000

With the exception of the Hangchow, Yu Hao, Tsui Lung and Wu Lin Tanneries which are equipped with modern machinery, all the other concerns in Hangchow employ only manual labour. Of the 26 tanneries in Yung-

chia, only the Chin Hsin (晉 新), Ching Hua (精 華) and P'u Ta (普 達) are equipped with modern machinery, employing electrical motive power.

The materials used in tanning include hides and chemicals, known in Chinese respectively as "primary" and "secondary" raw materials. The former consists principally of cow, horse, and ass hides, with a few skins of sheep, camels, deer, lizards, etc. The chemicals used are alum, salt, bark, gallnuts, etc.

Cow and Buffalo Hides—The primary material of the tanneries in Hangchow and Yungchia consists principally of cow and buffalo hides, especially the former, which are of greater durability and larger supply, and are used for manufacturing high-grade leather goods. The main sources of supply are within the Province, where cattle are raised, with some hides from the neighboring provinces of Anhui and Kiangsi. The supply for the Hangchow tanneries, in addition to hides from within the hsien, comes from Chinhua, Lanch'i, Ch'ühsien, Anhui, and Kiangsi provinces, while the Yungchia manufacturers obtain supplies from places along the Oukiang River. Hangchow and Yungchia are the collecting and distributing centers for the hide and leather business in Chekiang Province.

Raw hides are classified in three groups—dried, salted, and fresh or "blood." The last-named is the skin just as it is taken from cattle after slaughtering, and usually weighs 60 catties. Those weighing 51 catties and more are known as large size skins, and others as small size. The price for 100 catties of "blood" hides is from $17 to $19 for cow-hides and from $11 to $13 for buffalo-hides. Salted hides are those preserved with salt, and are divided into three groups according to size—large over 28 catties, medium over 16 and under 28 catties, and small less than 16 catties. About 75 catties of salted hides are obtained from 100 catties of "blood" hides, and the price per picul of salted cow-hides is from $25 to $30, and of salted buffalo-hides from $14 to $16. Dried hides are sun-dried skins without curing, and only about 40 catties can be obtained from 100 catties of fresh hides. The price of cow-hides is from $45 to $50, and of buffalo-hides from $26 to $30.

Sheep-Skins—Sheep-skins come next in importance as raw material for leather manufacturers in Hangchow and Yungchia, and are obtained from Chiahsing, Wuhsing, Wuk'ang, Tehts'ing, and other places in the Province. Raw sheep-skins are sold at about $1.50 to $2.10, according to size.

Horse-Hides—These are used more in the Yungchia tanneries than in Hangchow, and are bought and sold at from $6 to $8 each, according to size.

The secondary raw materials used in tanning consist of chemicals and miscellaneous supplies, and their use varies with the methods followed in different factories. The most important are noted below:—

Lime—Lime is used for removing hair from skins, and is obtained from Chekiang and Kiangsu Provinces at about $2 per picul.

Salt—Salt is used for preserving hides, preventing decompcsition of tissues on the surface of the skin when soaked in water for a long period. Salt is obtainable at about eight or nine dollars a picul.

White alum—Alum is produced Chekiang, especially P'ingyang the price being about $2.50 a picul.

Gallnuts—These are obtained from Hupeh, Szechuan, Shensi, Kuichow, etc., and are obtainable at about $10 per picul.

Potassium Bichromate—This is imported chiefly from Germany, at about $740 per ton.

Chrome Alum—This is also known as blue alum, and is imported from Germany at about $370 per ton.

Sulphuric Acid—The domestic supply is insufficient to meet the demand, and large quantities are imported from Japan.

Bark—The bark used in tanning included oak, mangrove, quebracho, and wattle.

Linseed Oil—This is used in varnishing and polishing leather, making it glossy and waterproof.

Dyes—For colouring leather black and yellow are most commonly used. The former come from Great Britain and the yellow from Germany.

PRODUCTION

The aggregate output of the Hangchow tanneries is about 161,000 skins a year. The Ts'ui Lung Tannery turns out about 28,200 annually, with the Shen Teh Shun and Hsin Chang producing about 18,000 pieces each, and the Yu Hao, Hangchow Leather Co., Yeh Cheng Mao, and Heng Chang each about 10,000. In regard to value, the Ts'ui Lung output is the largest, about $90,000 a year. At Yungchia the leather made is similar to that of Hangchow, and the value of the annual production is about $320,000. Details are as follows:—

LEATHER PRODUCTION IN HANGCHOW

Factories		Leather (Piece)	Value
Ts'ui Lung	(萃隆)	28,200	$94,000
Wu Lin	(武林)	6,960	56,000
Hua Sheng	(華盛)	2,580	54,000
Yu Hao	(裕號)	15,650	40,000
Hsin Ch'ang	(信昌)	18,000	35,000
Hangchow Leather Co.	(杭州皮革公司)	14,400	32,000
Shen Teh Shun	(沈德順)	18,740	32,000
Yeh Cheng Mao	(葉正茂)	12,460	30,000
Heng Ch'ang	(恒昌)	10,600	30,000
Ho Feng	(和豐)	5,580	20,000
Yung Shun Tai	(永順泰)	4,600	18,000
Tung I Kung	(通益公)	3,100	15,000
Ts'ing T'ai	(清泰)	2,705	12,000
Hua Lin	(華林)	4,280	12,000
Ch'en Yuan Ch'ang	(陳源昌)	2,200	12,000
Hsieh Mao	(協茂)	2,500	12,000
Hsieh Yuan Chang	(協源昌)	1,800	10,000
T'ung T'ai	(同泰)	2,380	10,000
T'ung Mao Feng	(同茂豐)	2,380	10,000
Feng Shan	(鳳山)	300	5,000
Fu Chang Ming Chi	(復昌明記)	1,220	3,800
Yuan Cheng	(圓成)	200	3,500
Ch'en Cheng Ho	(陳正和)	320	2,300
Mao A Niu	(毛阿牛)	—	—
Total 24		161,155	548,600

LEATHER PRODUCTION IN YUNGCHIA

Facteries		Value
Ch'en Chin Hsing	(陳 進 興)	$ 57,000
P'u Ta	(普 達)	46,000
Tsing Hua	(精 華)	35,000
Ho Shun	(合 順)	32,000
Kung I	(公 益)	29,600
Chin Hsin	(晉 新)	15,000
Chin Teh Shang Fu Chi	(金德盛福記)	13,000
Yeh Chin Fa	(葉 進 發)	10,000
Chin Teh Shan Lu Chi	(金德盛祿記)	10,000
Ch'en Hsieh Fa	(陳 協 發)	9,000
Ch'en Ho Fa	(陳 合 發)	7,000
I Yung Shun	(伊 永 順)	5,700
Chang Ho Feng	(張 合 豐)	5,200
Ch'en Kuang Sheng	(陳 廣 盛)	5,200
Ling Shen Fa	(凌 森 發)	5,000
Liu Chin Hsing	(劉 進 興)	4,900
Ch'en Yuan Sheng	(陳 源 盛)	4,800
Ch'en Lung Hsing	(陳 隆 興)	4,500
Cheng Chen Shun	(鄭 進 順)	3,700
Hu Yuan Shun	(胡 源 順)	3,600
Chin Teh Shen Li Chi	(金德順禮記)	3,500
Li Shun Fa	(李 順 發)	3,000
Cheng Shun Fa	(程 順 發)	3,000
Chin Lung Ch'ang	(金 隆 昌)	2,800
Chin Teh Shun Er Fang	(金德順二房)	1,500
Ma Chang Chi	(馬 增 記)	1,000
Total 26		320,400

LEATHER PRODUCTION IN CH'ENGHSIEN

Factories		*Value*
Kai Yuan	(開 源)	$ 8,000
Wu Wan Sheng	(吳 萬 盛)	7,000
Total 2		15,000
Grand Total 52		884,000

Part of the output of the tanneries in Chekiang is disposed of locally, the remainder being shipped to other ports. The largest market outside the Province for Hangchow leather is Shanghai, while Tientsin, Shantung and Honan also take a share. The greater part of the Yungchia product is sold within the province, with some shipments through Wenchow.

The tanneries purchase raw skins through hide dealers, whc also deal in bones, hair, offal, etc.

BY-PRODUCTS

Raw hides when brought to the tanneries are always in a fresh state and the hair, flesh, and fat attached to the skins are all saleable to be used in various ways. From one cow-hide 5 or 6 catties of hair, over 10 catties of offal, and 2 or 3 catties of fat can be obtained, and from a sheep-skin one catty of wool and 3 or 4 catties of flesh. Bones, skulls, claws, etc. are disposed of through special dealers, of which the following is a list:—

HIDE, BONE, AND HAIR DEALERS IN HANGCHOW

Dealers		Workers	Capital
Kuang Ho Shun	(廣合順)	24	$10,000
Tung Tai	(同泰)	5	4,000
Hsiang Yuan	(祥源)	12	3,000
Hsieh T'ai Hsiang	(協泰祥)	10	1,200
Hua Ch'eng	(華成)	6	1,000
Yun Feng	(允豐)	7	1,000
Hsin K'ang	(新康)	5	700
Chu Yuan Hsing	(朱源興)	5	250
Other 19		110	23,220
Total		184	44,370

LEATHER MANUFACTURES

Local manufacturers of leather goods are mainly of two classes, one making boots and shoes, and the other making suitcases, bags, purses, belts, harness, etc. There are 52 shoe-makers' shops in Hangchow, mostly small concerns, with capital ranging from a few hundred dollars to about $15,000, and the annual production ranges from about $1,000 to $60,000. Makers of leather cases in Hangchow are 38 in number, with a total capital of about $20,000, and doing a turnover of about $110,000 a year, details being as follows:—

CASE-MAKERS IN HANGCHOW

		Workers	Capital	Turnover
Yueh T'ai Lai	(粵泰來)	14	$ 4,000	$ 18,000
Ch'ang Ying Hao	(常盈號)	11	600	10,000
Yang Yung Feng	(楊永豐)	5	500	5,800
Liang Hsieh Ch'ang	(梁協昌)	5	300	4,600
Yuan Ta Ch'ang	(元大昌)	3	1,200	4,600
Kuang Jung T'ai	(廣榮泰)	3	800	4,500
Kuo Li Sheng	(郭利昇)	4	400	4,500
Li Yuan T'ai	(勵源泰)	4	500	4,500

		Workers	Capital	Turnover
Li Yuan T'ai	(勵元泰)	3	2,000	4,000
Other 29		116	8,940	49,620
Total		168	$19,240	$110,120

In Yungchia there are 34 makers of leather goods, whose output consists mainly of cases and leather-covered stools. The total capital of these concerns is no more than $21,300, but they produce about 40,000 leather cases a year, valued at about $200,000, and 60,000 stools, worth $28,000. The following table shows further details of the leather industry Yungchia:—

		Workers	Capital
Kao Shon Chi	(高壽記)	5	$ 1,500
Ou Nan	(甌南)	8	1,000
Chang Hsin Hua	(張新華)	7	1,000
Chen Hua	(振華)	10	1,000
Ho Shun Ch'ang	(合順昌)	5	1,000
Nan Chen Feng	(南振豐)	7	1,000
Chih Chin Shun	(池進順)	8	1,000
Teng Yung Fa	(鄧永發)	8	1,000
Kao Chen Shun	(高振順)	7	1,000
Wan Hsing Lung	(萬興隆)	5	1,000
Hsing Yeh	(興業)	5	1,000
Mei Nan	(美南)	5	1,000
Kao Chen Feng	(高振豐)	6	1,000
Hsin Chin Feng	(新進豐)	4	700
Lu Chen Hsing	(盧振興)	3	600
Hsin Shun Fa	(新順發)	4	600
Hua Nan	(華南)	4	500
Kao Chen Shun Hsi Hsin Chi .	(高振順新記)	4	500
Chang Ta Li	(張達利)	3	500
Chung Hua	(中華)	3	500
Li Chen Hsing	(李振興)	3	500
Hsin T'ung Hua	(新通華)	3	500
Hsieh Chang Hsing	(協昌興)	3	500
Chin Wan Ch'ang	(金萬昌)	3	500
Ta Fu	(達孚)	3	500
Chang Ho Kuang	(張合廣)	2	500
Chen Tung	(振東)	3	500
Hua Nan Hsing Chi	(華南興記)	4	500
Hua Ch'ang	(華昌)	3	500
Kung Hsing Hsiang	(公興祥)	4	500
Ta Hsing Lung	(大興隆)	3	500
Mei Ta	(美大)	3	500
Chou Chen Shun	(周振順)	3	500
Wu Yü Feng	(吳裕豐	4	400
Total 34		155	24,300

CHAPTER XXIV

MATCH MANUFACTURE

THE FIRST enterprise for making matches in Chekiang was the Kuang Hua (光華) Factory, established in 1911 in Hangchow, and in the following year the Cheng Ta Hsin Co. (正大新) opened business in Ninghsien. No other factories were started until 1926, when the Shui Chang Match Company (燧昌) was established in Lishui, and two years later the Kuang Ming Match Company (光明) started operations in Yungchia.

These was no splint factory opened until 1924, when the Pu Chang works (普昌) started in Lishui, and there are now five splint factories in the Province supplying local match manufactures.

There are nine combined match and splint factories in Chekiang. The Kuang Hua Match Company, the largest, is established in Hangchow with a capital of $500,000, and doing a business turnover of about $1,600,000 annually. This concern employs the largest number of workers, about 1,500. The Cheng Ta Hsin Match Company and the Kuang Ming Match Company are established in Ninghsien and Yungchia each having a capital of $100,000. There are three match and splint factories in Lishui, the Shui Chang being the largest, and having a capital of $240,000. The following table gives several details of the match and splint factories in Chekiang:—

MATCH AND SPLINT FACTORIES IN CHEKIANG

	Location	Organization	Capital	Workers
Kuang Hua Match Co. (光華)	Hangchow	Corporation	$500,000	1,490
Cheng Ta Hsin Match Factory (正大新)	Ninghsien	Corporation	$100,000	353
Kuang Ming Match Co. (光明)	Yungchia	Corporation	$100,000	258
Shui Chang Match Co. (燧昌)	Lishui	Corporation	$240,000	726

	Location	Organization	Capital	Workers
Pu Chang Match & Splint Factory (普 昌)	Lishui	Partnership	$ 30,000	221
Pu Chang Branch Factory (普 昌)	Lishui	Sole Ownership	$ 40,000	60
Hsieh Lung Splint Factory (協 隆)	Fuyang	Partnership	$ 40,000	324
Chung Hua Splint Co. (中 華)	Hanghsien	Corporation	$ 25,000	142
Hsing Hua Splint Co. (興 華)	Chuchi	Corporation	$ 5,000	160
Total			$1,080,000	3,734

The total number of persons employed in the match industry is 2,827, of whom 2,005 are women, 694 men, and 128 children. Those engaged in making splints number 907, of whom 578 are men, 83 women, and 246 children. Child workers are hired by adults to assist them, and are not paid by the factory.

Workers are paid by the month, day, or piece-work. The highest wage paid in Hangchow to male workers is $45 per month and the lowest $18, and for women workers the highest is $18 and the lowest $6. In Ninghsien wages are generally paid by the day, at about 50 cents, payable twice a month. In Yungchia men are paid by the month, and women by piece work. The daily wage paid in Lishui is from 50 cents to $1 for men, and 20 to 50 cents for women. Women engaged in making boxes, filling, labelling, etc. are paid by piece work.

All the factories are equipped with machinery, and with the exception of the Hsieh Lung and Hsing Hua, which use steam, generate power with Diessel engines. The mechanical equipment, however, is neither adequate nor up-to-date.

RAW MATERIALS

Poplar, pine *hibiscus*, *pai yang* (白 楊), and willow are used for making match-sticks, while pine is employed for making containers. Pine was formerly almost wholly

imported from America and Canada, but in recent years, factories have begun to use native pine. Adequate supplies are vailable from the south-eastern part of the Province, where there are large forests in the hilly areas. Splint factories obtain wood from Lishui, Sungyang, Yunho, Lanchi, Huichiang, Wuhsing, Hangchow, and other places, so that all the wood used by the match and splint factories is produced within the Province.

Of the numerous chemicals used in match manufacture potassium chloride, sulphur, red amorphous phosphorous, and paraffin are the most important. Potassium chloride used by Chekiang factories is bought from Germany, the annual consumption being about 11.400 barrels, valued at over $340,000. Sulphur is bought chiefly from Japan, and also from United States and Italy. Red amorphous phosphorous, used in making safety matches, is chiefly imported from Germany at about $145 per case, and about 5,480 cases, worth some $800,000, are taken by the Chekiang factories. Paraffin is used in place of sulphur, and is obtained from foreign oil companies. Other chemicals used in the manufacture of matches are antimony trisulphide, obtained from Kiangsi, Kuangtung, and Kuangsi, zinc oxide, most from Japan; potassium dichromate, imported from Sweden and U.S.A.; ferric oxide, (Chinese), glass-powder, etc. The glue used is either gum arabic from India or hide glue of domestic make. The latter is bought at about 6 to $8 per bag from the Chih Chang Hsin Glue Company (熾昌新製膠公司) in Shanghai and Hankow.

The process of manufacture is divided into three parts —making splints and sticks, match-heads, and containers. In making splints and sticks, wood is sawn into planks and after being softened by steaming is planed into splints or cut into sticks. In making match-heads chemicals must be properly prepared in order to form a suitable mixture. The sticks are coated with paraffin before being dipped in the match-head mixture, after which they are taken to the drying-room, and sent in due course to be boxed.

The making of match boxes is generally done by women, the work being divided into two parts—making

the outside and inside container. On the outside of each box a label is parted, and on both sides phosphorous paste is applied to make striking surfaces. Every ten boxes of matches are wrapped together, and 120 of such packages are packed into one *ting* (聽). A case contains 6 *ting* of 120 packages, or 7,200 boxes of matches.

The products of the Chekiang match factories include safety and lucifer matches. The following table gives details of production of these factories.

PRODUCTION OF MATCH AND SPLINT FACTORIES IN CHEKIANG

	Match (Cases)
Kuang Hua	40,000
Cheng Ta Hsin	8,000
Kuang Ming	3,000
Shui Chang	15,000

	Splint (1,000 Sets)
Pu Chang*	150,000
Pu Chang Branch	80,000
Hsieh Lung	480,000
Chung Hua	190,000
Hsing Hua	not known

*Pu Chang also manufactures 1,200,000 thousand sticks annually.

The bulk of the products of the match factories in Chekiang marketed within the province, with a portion exported to Kiangsu, Anhui, Kiangsi, Kuangtung and Fukien.

CHAPTER XXV

MACHINERY MANUFACTURE AND REPAIR

BEING so close to Shanghai, modern factories established in Chekiang bought machinery from that port, and the need of such manufacturing plant was not felt. As the number of factories increased, machine-shops on a small scale, doing only repair-work, began to appear, but it was not until after the establishment of the Chekiang Technical School that machine manufacturing was started by the Wu Lin Iron Works, Hangchow (武林鐵工廠), in 1914. This enterprise started on a very modest scale, its initial capital being only $20,000, and it was little more than a repair-shop, but as business prospered the factory began to expand, and started the manufacture of light-machinery, principally that used in the silk reeling and weaving. In 1917 the Jacquard looms made by this factory were very largely used by silk weaving factories in Chekiang, and a few years later, the capital of the factory was increased to $100,000. Other machine-shops, mostly small concerns, were subsequently established in Hangchow, Ninghsien, Chenhai, Wuhsing and Juian, but as these shops were largely dependent upon the weaving factories, when the weaving industry in the province was depressed in 1927, 1928 and 1929, a considerable number of them closed down. During the last few years, conditions having improved somewhat, new machine-shops have appeared in the Province.

Machine-shops in Chekiang vary greatly in size and organization. For instance, the Wu Lin Iron Works, Hangchow, with a capital of $100,000, is fairly well equipped with plant for the manufacture of silk reeling and weaving machines, while the smallest establishments are little better than blacksmith's shops. The number of workers ranges from about 200 down to five or six, receiving monthly wages of from $25 to $60, apprentices usually getting about $10. They usually work nine hours a day, though in some shops night-shifts have been introduced.

The following table shows details concerning the larger machine-shops in the Province:—

	Location	Established	Organization	Capital	Workers	Products
Yung Hsing Iron Works (永興鐵工廠)	Hangchow	1919	Private Ownership	$1,800	11	Weaving Machinery & Parts
Ta Yu Yuan Iron Works (大有源鐵工廠)	"	1929	" "	$2,400	26	" " "
Ch'eng T'ai Iron Works (成泰鐵工廠)	"	1919	Partnership	$12,000	48	" " "
Shan Yu Iron Works (三友鐵工廠)	"	1927	"	$10,000	46	" " "
Ying Chen Ch'ang (應振昌)	"	1919	Private Ownership	$50,000	37	" " "
Ta Lai Iron Works (大來鐵工廠)	"	1931	" "	$20,000	104	" " "
Shen Ch'ang Iron Works (愼昌鐵工廠)	"	1931	" "	$10,000	42	Repair Work
Ta Yeh Iron Works (大冶鐵工廠)	"	1918	Corporation	$15,000	30	Engines, Silk Reeling & Weaving Machines, Farm Implements.
Wu Lin Iron Works (武林鐵工廠)	"	1914	"	$100,000	185	Silk Reeling & Weaving Machines.
Hui Ch'ang (滙昌機器廠)	Ninghsien	1904	Partnership	$4,000	30	Diesel & Kerosene Engines, Rice Milling Machine, Repairing.
T'ai K'ang (泰康機器廠)	"	1926	"	$1,500	8	Diesel and Kerosene Engines.
Shun Chi (順記機器廠)	"	1901	"	$5,000	75	Pumps; Repairing.

	Location	Established	Organization	Capital	Workers	Products
Ch'uan T'ung (全通機器廠)	Ninghsien	1924	Partnership	$1,600	12	Engines, Motors and Repairing.
Ningpo Works (寧波工廠)	"	1915	Attached to Ningpo Engineering School	$24,000	50	Engines, Weaving Machines, Laths. Planers & Machinery made in order.
Hsin Ch'ang (新昌機器廠)	"	1924	Partnership	$2,000	5	Diesel Engines, Repairing.
Yü Meng Factory (毓蒙製造機器廠)	Yungchia	1906	"	$5,000	35	Sawing Machines.
Li Yü Meng (李毓蒙)	"	1906	Private Ownership	$3,000	90	Cotton Bowers.
Hui Feng Factory (滙豐翻砂廠)	Ninghsien	1923	Partnership	$5,000	24	Machinery Parts & Castings.
Jui Li Factory (瑞利翻砂廠)	Juian	1928	Corporation	$3,000	—	Rice Milling and Noodle Making Machines.
Hsin Ch'eng (新成)	Wuhsing	1922	Partnership	$5,000	30	Repairing.
Jui Ch'ang (瑞昌)	"	1921	"	$1,500	18	"
Ya Teh (亞德)	"	1931	"	$1,000	8	"
Ching I (精益)	"	1932	Private Ownership	$2,000	8	"
Hua Ch'ang (華昌)	Juian	1912	" "	$500	16	Ginning and Bowing Machines.

These shops buy most of their materials from abroad. Iron comes from Japan, Great Britain, India, and Sweden, while steel, German silver, and antimony are bought from Japan, Germany, Great Britain, and the United States. Brass, copper and aluminium are locally supplied to a small extent. Iron is bought at from $7 to $10 per picul, steel at $12, brass at $28, bronze at $50, tin at $130, and lead at from $14 to $20.

It is impossible to ascertain the quantity of metal used by the Chekiang machine-shops every year, accurate statistics not being available. The Wu Lin Iron Works uses annually about 245 tons of iron and 90 piculs of brass and bronze. The total amount of iron used by the machine-shops in Hangchow yearly is about $460,000 in value, and that of brass and bronze about $16,000. These shops consume about $17,000 of coal and coke for fuel, and spend $13,000 on power. Almost all the metal used by machine-shops in the province is bought from Shanghai, a small quantity being supplied by firms in Hangchow and Ninghsien.

The machines made by Chekiang manufacturers consist principally of those used in the silk reeling and weaving industries. No less than 16 varieties of such machinery are manufactured by the Wu Lin Iron Works. Other manufacturers in Hangchow, like Ta Lai, Yung Hsing, Ch'eng T'ai, etc., also produce various kinds of silk reeling and weaving machinery. The principal products of Ninghsien manufacturers are oil and Diesel engines, motors, pumps, and motor launches, in addition to silk weaving machines.

Repairing is carried on by almost every machine-shop in the province, but those doing repair work exclusively did not appear until 1928. At first, there was only one such shop in Wuhsing, but at present five repair-shops are to be found in the province, doing altogether an annual business of about $50,000.

The greater part of the machinery made in Chekiang is sold in the province, though the Wu Lin Iron Works sells machinery to Shanghai, Hongkong, Soochow, Wusih,

Wuhsing, Shaohsing, Shansi, Szechuan, Shantung, and Tientsin to the value of about $300,000 annually. The principal markets for the Ta Lai Works are Hangchow, Huchow, and Shanghai, and the total sales amount to about $70,000 annually. The Chen Ch'ang has an annual output of about $20,000 locally. The total production of Hangchow machinery manufacturers amounts to about $900,000 in value annually, while Ninghsien manufacturers have an output of $210,000. . The products of Ninghsien and other districts are almost entirely sold in the province.

CHAPTER XXVI

OTHER METAL WORKS

BOAT BUILDING

THERE are seven firms in Chekiang engaged in building boats, one in Ninghsien and six in Hangchow, details being shown in the following table:—

	Location	Organization	Wkrs.	Capital	Turnover
Hung Ta (鴻大造船廠)	Ninghsien	Partnership	16	$7,000	$21,000
Ho Ch'ang Ching Chi (和昌慶記造船廠)	Hangchow	Individual Ownership	41	$15,000	$14,000
Hang Chu Co. (杭諸公司船廠)	Hangchow	Partnership	43	$10,000	$12.000
Chien Kiang Co. (錢江公司船廠)	Hangchow	Partnership	18	——	——
Chien P'u Co. (錢浦公司船廠)	Hangchow	Partnership	16	——	——
Chen Hsing Co. (振興公司船廠)	Hangchow	Partnership	18	——	——
Yang Mao Hsing (楊 茂 興)	Hangchow	Private Ownership	14	$1,000	$5,000

The above firms employ about 130 workmen and 40 apparentices. The former receive a daily wage of from 80 cents to $1.50, while apprentices get an allowance of frcm $12 to $48 a year in addition to their keep.

Imported pine and teak, wrought iron and steel plates are used in boat-building. The Hung Ta specializes in building craft of from 3 to 15 tons, while Ho Ch'ang and Hang Chu build only for clients who furnish designs and materials. With the exception of Ho Ch'ang and Hang Chu, which are working all the year round, the other firms are active only from March to August. When business is very brisk, additional workmen from Shanghai are employed temporarily. During the last few these boat-building firms have been doing fairly good business.

BRASS, COPPER AND TIN WARE

The manufacture of brass, copper and tin ware in Chekiang is centered in Hangchow, Ninghsien, Yungchia

and Shaoshing, where some manufacturers, such as Lao Fu Shun (老福順), Chen Yü Ch'ang (陳裕昌) and Ch'en I Shu (陳義書) have been established for more than a century. Thirty years ago these concerns did a very profitable business, as brass and tin ware was generally in use, but as imported enamelware became more widely used, manufacturers of brass and tin ware found it difficult to sell their products, and in recent years quite a number of these concerns have closed down.

There are about 150 shops manufacturing and selling brass, copper, and tin ware in Hangchow, having a total capital of more than $60,000. They belong to many groups, each producing some particular article. About 1,000 workmen, mostly natives of Hangchow and Shaohsing, are employed in manufacturing copper and brass ware, and wages vary from $3 to $12 a month, board and lodging being provided by employers. Tin ware shops employ about 100 workmen, mostly natives of Shaohsing and Chuchi, paid daily or at piece rate, a day worker receiving from 13 to 32 cents, with board and lodging. The following table shows the capital and annual output of the brass, copper and tin ware manufacturers in Hangchow:—

		Capital.	Output.
Kao Kuang T'ai	(高廣泰)	$5,000	$24,800
Cheng Pao T'ai	(鄭寶泰)	4,800	17,400
Shih Hsing	(時 新)	4,000	16,000
Nan Yang	(南 洋)	3,000	15,000
T'ien T'ai	(天 泰)	1,000	12,000
Chan Wan Ho	(詹萬和)	600	9,000
Wu Kuang Shun	(吳廣順)	1,800	8,500
Lou Yuan Hsing	(婁源興)	1,000	8,000
Lu I T'ai	(陸義泰)	1,000	8,000
Chang Shun Hsing	(張順興)	800	8,000
Chou Chang T'ai	(周長泰)	500	6,400
Liang Chen Hsing	(梁正興)	500	6,000
Hsu Jing Sheng	(許榮森)	1,500	5,850
Tung Yü	(同 裕)	1,500	5,500
Chen Yung T'ai	(陳永泰)	1,000	5,000
Shen Yuan T'ai	(沈源泰)	500	5,000
Shen Tien Ching	(沈天成)	500	5,000
Others	.....	31,220	635,185
Total	.....	$59,420	$816,574

Formerly there were 53 brass and tin ware manufacturers in Ninghsien, but 15 have closed down on account of bad business. The 38 who still remain in business have a total capital of about $73,000, as shown by the following table, which gives the capital and annual output of brass and tin ware manufacturers in the district:—

		Capital.	Output.
Fu Shun Yü Chi	(福順裕記)	$6,000	$270,000
Lao Fu Shun	(老福順)	4,400	98,000
T'ung T'ai	(同泰)	2,000	95,000
Hui Chi	(滙記)	2,400	37,000
Chou Shun T'ai	(周順泰)	2,000	36,000
T'ung Shun Ch'ang	(同順昌)	4,500	24,000
Yuan Sheng T'ai	(源昇泰)	4,000	21,000
Tung Hung T'ai	(東洪泰)	1,000	18,000
Fu Hao Ch'eng Chi	(福號誠記)	5,000	17,000
T'ung I Ch'ang	(同義昌)	2,200	17,000
San T'ai	(三泰)	2,000	17,000
T'ung Hsing Ch'ang	(同信昌)	3,600	15,000
Wei Ch'eng	(偉成)	2,500	15,000
Tung Hung T'ai	(董洪泰)	1,000	13,000
Wang Jen T'ai	(汪仁泰)	4,000	12,000
Chi T'ai	(吉泰)	3,700	11,000
T'ung Yü Shun	(同裕順)	2,800	10,000
T'ung Fu Ho	(同福和)	2,400	10,000
Fu Jen T'ai	(福泰仁)	1,000	10,000
Fu Yü Shen	(福裕慎)	2,000	9,800
Pao Shun Hsiang	(寶順祥)	3,000	9,500
Yung Ch'ang	(永昌)	1,000	8,000
Li Yueh LaiHsiangChi	(厲悅來祥記)	1,000	6,000
Jen Wan T'ai	(仟萬泰)	800	6,000
Shih Wan T'ai	(石萬泰漆記).....	1,000	5,600
Chou Shen T'ai	(周慎泰)	1,000	5,000
Ch'en Ho Hsing	(陳合興)	1,000	4,000
Ma Shun Hsing	(馬順興)	1,000	3,000
Hsi I Ch'ang	(西義昌漆記).....	1,000	3,000
Li T'ung Hsing	(李同興)	500	3,000
Hung Shun T'ai	(洪順泰記).....	1,000	2,000
Yuan I Ch'ang	(源義昌)	500	2,000
Ch'en Ch'ang T'ung	(陳昌同)	400	1,500
Ch'en Mao Ch'ang	(陳懋昌)	400	1,200
Peh I Ch'ang	(北義昌)	400	1,200
Kuang Chang	(廣昌)	500	1,150
Wu Teh Li	(吳得利)	500	970
Shun Ho	(順和)	400	950
TOTAL.....		$73,900	$819,870

In Yungchia there are 45 brass and tin ware manufacturers, with a total capital of $25,000. The following

table shows the capital and annual output of manufacturers in the district:—

		Capital.	Output.
Ch'en Wan Feng	(陳萬豐)	$ 500	$ 2,000
Ch'eng Li Ta	(鄭立大)	500	2,000
Hsing Ch'ang Ho	(新昌和)	500	2,000
Hsü Teh Hsing	(徐德興)	500	2,000
Li Yuan Shun	(厲源順)	300	2,000
Wang Cheng Chi	(王增記)	500	1,966
Yung Yü	(鎔 餘)	500	1,905
Hsia Jih Hsing	(夏日興)	300	1,901
Hsin Yung Yuan	(新永源)	500	1,723
Chin Yuan Feng	(金源豐)	500	1,500
Chin San T'ai	(森三泰)	4,000	30,000
Yung T'ai Ch'ang	(永泰昌)	3,000	20,406
Mei Chun Ch'eng	(梅春成)	1,500	16,277
Wang Pao Feng	(王寶豐)	1,000	11,092
Chung Lung Hsing	(弘隆興)	500	9,601
Chi Chü Shun	(季榘順)	500	5,533
Ch'en Chung Ta	(陳增大)	500	3,300
Kung Ta Ch'eng	(公大成)	500	2,731
Hsin Fu Hsing	(新福興)	1,000	2,600
Wu Ch'ang Ho	(吳昌和)	500	1,500
Hsin Ch'ang Hsing	(新長興)	500	1,500
Wang Chen Shun	(黃振順)	500	1,500
Chu Yuan Hsing	(朱源興)	500	1,500
Pan Yuan Sheng	(潘元盛)	200	1,500
Lin T'ung Hsing	(林同興)	500	1,417
Lü Chen Shun	(呂震順)	500	1,200
Hsin Yung Sheng	(新永盛)	300	1,200
Hsü Chin Hsing	(徐進興)	600	1,169
Wu Ch'ang T'ai	(吳昌泰)	500	1,000
Lü Yung Fa	(呂永發)	200	1,000
Hsin Ch'ang Ho	(新長和)	600	1,000
Hsin Tien Hsing	(新天興)	100	1,000
Hsin Tung Ch'ang	(新東昌)	100	1,000
T'ung T'ai Ch'ang	(同泰興)	200	1,000
Hsin Teh Hsing	(新德興)	300	1,000
Heng Chi Ch'ang	(恒吉昌)	300	1,000
Hsin Chi Hsing	(新暨興)	500	1,000
Hsin Yü Hsing	(新裕興)	200	1,000
Hsin Hsieh Hsing	(新協興)	200	1,000
Ch'iu Teh Sheng	(邱德盛)	200	1,000
P'an Shun Fa	(潘順發)	500	1,000
Ch'iu Teh Sheng	(邱德盛)	100	1,000
Ch'en Yuan Shing	(陳源興)	100	1,000
Chin Yung Sheng	(金永盛)	50	1,000
Hsin I Hsing	(新義興)	100	1,000
TOTAL.....		$25,450	$150,021

In Shaoshing there are only 25 brass and tin ware manufacturers, with a total capital of $19,500, as shown in the following table:—

		Capital
Chen Yü Ch'ang	(陳裕昌)	$3,000
Ch'en I Ch'ang	(陳義昌)	2,000
Hsiang Ho Sheng	(祥和陞)	2,000
Fu Hao	(福 號)	2,000
Ku Yuan Ch'ang	(顧元昌)	1,200
T'ung Ch'ang	(同 昌)	1,200
Chan Wan Li	(湛萬利)	1,000
Ch'en Yuen Hsing	(陳源興)	1,000
Kung Hsin An	(公信安)	800
Chou Yuan Hsing	(周源興)	500
Ch'en Yuan Chi	(陳源記)	500
Heng I Chang	(恒義昌)	500
Wu Jen Hsing	(五仁興)	500
Kung I Li	(公益利)	400
Chang Wan Hsing	(張萬興)	400
Shen Hung Ch'ang	(沈洪昌)	400
Ch'en Hui Hsing	(陳惠興)	400
Ho Pao Ch'ang	(賀寶昌)	300
Huang Lung Ch'ang	(黃隆昌)	300
Ch'ien Wan Hsing	(錢萬興)	300
T'an Jui Hsing	(譚瑞興)	500
Fan Sheng Ch'ung	(范生昌)	200
T'an Jui Hsing	(譚瑞興)	200
Ch'en Yuan Hsing	(陳源興)	200
Total		$19,500

Several brass and tin ware manufacturers are established in the districts of Chiahsing, Changhsing, Hsiaoshan and Yuyao, capital and value of annual output being shown in the following table:—

	Location	Organization	Capital	Output
Ch'en Wan Feng (陳萬豐)	Chiashing	Private Ownership	$6,000	$12,250
I Chang (義 昌)	Chiashing	Partnership	$8,000	$10,500
Heng I (恒 義)	Chiashing	Private Ownership	$4,000	$8,750
Yü Hsing (裕 興)	Chanshing	Private Ownership	$400	$900
Feng Chü Hsing (馮 記 興)	Chanshing	Private Ownership	$400	$800

	Location	Organization	Capital	Output
Fu Jui Yuan (傅瑞源)	Hsiaoshun	Partnership	$600	$7,500
Wang Jui Hsing (王瑞興)	Hsiaoshun	Private Ownership	$500	$6,000
Lao T'ung Ho (老同和)	Yuyao	Private Ownership	$1,600	$13,000
		TOTAL	$21,500	$59,700

The approximate prices and sources of supply of materials used are shown in the following table:—

	Per Picul.	From
Shu Pan (brass or German silver plate)	$30	Japan, China
Sheng Pan (brass or German silver plate)	$21–$25	Japan, China
Chia Kao Pan (German silver plate)	$60	Japan, China
Yeh Pan (brass plate)	$30	Japan, China
Shuang Chang (brass plate)	$50	Japan, China
Shui Kuang (brass plate)	$55	Germany
Huang Pi (brass sheets)	$50	Germany, U.S.A. Great Britain, Japan
Hung Pi (copper sheet)	$70	U.S.A.
Tao Kou (tin-copper-graphite alloy)	$16–$20	Netherlands
Kou Kuang (tin-copper-graphite alloy)	$60	——
Ching Chien (graphite)	$14–$18	U.S.A.
Pai Chien (whitelead)	$20	U.S.A.

The manufacture of copper, tin and brass utensils is mainly done by hand. In making basins, footwarmers, ladles, gongs, cymbals, etc., the metal is cast in moulds of shapes desired, the surface being polished either by powder or with emery and coal-dust on a lathe worked by the foot. In making kettles, jars, dinner sets, etc., metal sheets are first cut into shapes which are joined to form the desired article. Tin utensils are also made by casting molds.

On account of the large variety of their products, it is impossible to determine the exact output of these manufacturers but in 1931 the total output of Hangchow manu-

facturers was approximately $310,000, the Kao Kuang Tai, Shih Hsing, Nanyang and Tien Tai leading in volume of output. The value of brass, tin and copper utensils made by Ninghsien manufacturers far exceeds the output of Hangchow, amounting annually to more than $800,000. The annual output of Fu Shun Yu alone was valued at about $270,000, while that of Lao Fu Shun and Tung Tai each exceeded $90,000. In Yungchia the value of the annual output is about $150,000, with Ching Shan Tai the leading manufacturer, with a production worth more than $30,000. In Shaoshing, although no statistics are available in regard to output, it is estimated that the value is about $100,000 annually.

The tin, brass, and copper products of Hangchow are sold in Kiangsu in addition to supplying local needs. Formerly, when water-pipes were more widely used by smokers, the Hangchow manufacturers extended their market as far as Hopei and other nothern povinces, but this business has declined cousiderably during recent years. The products of Ninghsien manufacturers are sold in Fenghua, Hangchow, Yüyao, Linhai and Yungchia, but makers in other districts cater for local requirements only.

IRON PAN INDUSTRY

The manufacture of iron pans is an industry of very long standing in Chekiang province, and as these pans are used in every Chinese kitchen, the four manufacturers in Chekiang are still doing good business in spite of the keen competition of machine-made products. Details of the four factories are given in the following table:

	Location	Organization	Capital	Workers	Established
Jen Ho (人和冶坊)	Yuyao	Private Ownership	$6,000	30	1662
Hsieh Sheng Ch'ang (協盛昌鑼號)	Fuyang	Partnership	$3,000	16	1885
Jen Ho (仁和鐘鑼廠)	Ninghsien	"	$3,000	9	1904
Wan Jun (萬潤鐘廠)	Tinghai	"	$5,000	22	1921

Workmen come principally from Ninghsien and Shaohsing are paid from $12 to $19 a month or from 50 to

60 cents a day. An apprentice receives an allowance of $2 per month. Clerks are paid from $8 to $20 a month.

Pig iron and scrap are used in the manufacture of pans. The Jen Ho factory at Yüyao uses annually about 2,500 piculs of scrap iron bought from Shangyü, Yüyao, Ninghsien, and Ch'enghsien at about $4.80 per picul, and 1,500 piculs of iron purchased from Shanghai at about the same price. The Hsieh Sheng Chang factory buys annually about 1,600 piculs of scrap from Shanghai and Fuyang at $5.20 per picul. The scrap used in the Wan Jun factory comes from Tinghai and T'ient'ai, while the Jen Ho factory at Ninghsien collects scrap iron locally.

The Jen Ho factory consumes annually about 10,000 piculs of charcoal bought from Haining Fuyang, Ch'enghsien, and Chühsien at $1.80 per picul, and about five tons of coal from the Kaiping Colliery (開平煤礦). The Hsieh Sheng Chang factory consumes 3,000 piculs of charcoal a year.

The manufacture of iron pans is a very simple process. Pig iron and scrap are melted together and the metal is poured into clay moulds to the required shape and after cooling the pan is taken out of the mould and smoothed. A clay mould can be used continuously for three days, and is good for about 80 castings.

The Jen Ho factory of Yüyao produces annually 72,000 pans, 20,000 *yuan kuang* (圓光, iron rings used to support pans over a stove), and 40,000 blades for ploughs. The factory is in operation throughout the year except in July. The annual output of Hsieh Sheng Chang is 20,900 pans and 5,000 ploughshares. The Jen Ho factory of Ninghsien turns out iron bells as well as pans, the total annual output being valued at about $8,000. The Wan Jun factory produces every year about 80,000 iron pans, worth $40,000, and 6,000 ploughshares, worth $1,000.

The output of the Jen Ho Factory of Yüyao is sold in Ninghsien, Ts'uch'i, Yüyao and Shangyü, pans being sold at 45 cents each, *yuan kuang* at 15 cents, and ploughshares at 25 cents. The ploughshares manufactured by Hsieh Sheng Ch'ang are sold locally at 13 cents, and the iron pans

are sold in Shanghai at $1.10 each. The principal markets for the products of Wan Jun are Changshu (常 熟), P'inghu, Chiashan and Shanghai, though a considerable number are sold locally. The Jen Ho factory of Ninghsien sells its products to Fenghua and Tsuch'i besides supplying local demands.

SWORD-MAKING AT LUNGCHUAN

The double-edged swords produced in the district of Lungchuan Chekiang Province, have been famous since the Chou Dynasty, when a swordsmith named Ouyatse (歐冶子) made three blades for the Prince of Chu (楚王). The swords made in this district are noted for their fine temper, and there are three swordsmiths in the city, Tsien Tsu Hao (千字號), Wan Tsu Hao (萬字號), and Shen Kuan Lung (沈廣隆), but doing business only on a very small scale.

Iron, steel, and rosewood form the materials needed, the last being made into scabbards. Iron comes from Yunho costing from $7.50 to $8.50 per picul, while steel is bought from Chengho (政 和), in Fukien, at about $25 per 100 catties. The three swordmakers use annually about 1,400 worth of iron and about the same amount of steel. Rosewood is obtained in the district, and is sold in lots of about 3,500 catties, costing from $140 to $150 per lot.

In making swords the iron is first refined and made roughly into the shape of a blade. The edges are inlaid with steel and the whole blade hammered into shape and polished with iron filings. It takes a workman from three to four days to make a sword, and ten catties of iron and an equal quantity of steel are required. From one to two catties of rosewood are used in making a scabbard.

The three shops in the district turn out more than 2,000 swords a year, worth about $8,000, but prices vary greatly, ranging from one to more than a hundred dollars. The swords produced in Lungchuan are mostly sold in Shanghai, Hangchow, Wenchow and other districts in Chekiang, and are used in fencing or for decorative purposes.

STEEL REED MAKING IN WUHSING

Steel reeds for use in weaving looms are manufactured in Chekiang province at two factories in Wuhsing, the Chung Hua (中華鋼扣廠) and the Ming Yang (明揚鋼扣廠). The former was established in 1927 with a capital of $2,000, employs seven workmen, and produces annually 2,000 steel reeds, worth $14,000. The other factory was established in 1932 with the same amount of capital, and the workers and output are also about the same as those of the Chung Hua factory. When the silk weaving industry was flourishing the demand for the products of these factories was considerable, and they usually sell their entire output every year, but as the weaving industry is seriously depressed, both factories are also suffering from bad trade.

Steel, mostly from Switzerland, is bought through importers in Shanghai, and about 5,000 kilograms are consumed annually by the two factories, more than a kilogram being needed for each set of reeds made, which are sold to local weavers at $7 each.

CHAPTER XXVII

STRAW HAT AND MATTING INDUSTRY

THE MAKING of straw hats and matting has assured an important position in Chekiang Province. The matting industry is centered in Ninghsien, Yungchia, Yüyao, and Huangyen, "Ning" mats (寧席) from Ninghsien and "soft" mats from Yungchia being most well-known. During the Ching dynasty this industry was very prosperous, the annual production varying from 4,000,000 to 5,000,000 pieces, but with the importation of Japanese matting during the latter part of the Ching dynasty the popularity of Ningpo and Wenchow (Yungchia) mats has gradually declined.

The first matting factory employing modern machinery was the Chung I (中一花蓆廠) at Yungchia. This factory, capitalized at $48,000, was established in 1918 for the manufacture of printed, soft, and coarse mats. In the following year the Ming Hua factory (明華蓆廠) was established at Yüyao, with a capital of $10,000, later increased to $50,000. In 1921 the Hua Feng (華豐蓆廠), and Kiang Chü Sheng (江聚盛) factories were established in Ningpo and Yungchia respectively, and Japanese mats were displaced by the new Chinese products. In 1926 and 1927 many more matting factories were established, including the Ming Hsin (明心), Hsiang Hsiung (翔熊), Pao Hsing (寶星), Ta Sheng (大生) and Jen An (仁安) at Ningpo, and the Chuan An (泉安), Teh Ta (德大), Tung Hua (同華), Ou Mei (甌美), and Yuan Chang Teh (元昌德) at Yungchia. It is estimated that the total output of these factories amounted to 8,000,000 mats, but since 1929 unstable economic conditions both at home and abroad have caused the matting industry to gradually decline. The Hsiang Hsiung, Hua Feng, Hua Sheng and Jen An factories were suspended owing to financial difficulties, while others, though still operating, have had to adopt drastic economies in order to meet the difficult situation.

The manufacture of straw hats in Chekiang has had a similar industry. The raw material now used for making hats is different from that used 20 years ago. In Ningpo and Yüyao *huang ts'ao* (黃 草) and *hsi ts'ao* (蓆 草) were used for making the large and coarse hats largely used by farmers. With the importation of hats made of wheat-straw the popularity of the domestic product gradually declined. In 1921 with the imported *chin ssu ts'ao* (金絲草) or buntal fibre, and "glass" grass (玻璃草) foreign merchants employed native workers to manufacture foreign-style straw hats, which industry was first started in Ningpo and later spread to Yüyao, Tsuch'i, Linhai, Haimen, Huangyen, Wenling, Lots'ing, Yungchia, Ninghai, P'ingyang, and Juian. In 1927 the straw hats turned out from these places numbered 5,000,000, valued at $26,000,000, and it is estimated that the people who earned a living by making hats numbered 330,000. Since 1930 the depressed economic conditions at home and abroad gave the straw hat industry a setback. According to a Ningpo Customs report the *chin ssu* hats exported during 1927 amounted to 5,000,000, decreasing to 3,100,000 in 1929. In 1930 and 1931 the annual export fell to 1,500,000, while for the first six months of 1932 the export amounted to only 292,000 pieces, clearly indicating that the straw hat industry in Chekiang is declining.

The manufacture of old-style straw mats is centered in Ningpo, while Yungchia is noted for the production of the printed variety. In Yüyao the Hua Ming factory (華 明) turns out old-style printed mats, while at Huangyen (黃 巖) and Huangshant'ou (璜山頭) ordinary mats of the old style are made.

Workers engaged in the manufacture of old-style mats in Ningpo number 100,000 and in Yungchia, 70,000, while in factories where modern machinery is employed the workers are apportioned as follows: Ningpo, 210, Yüyao 150, and Yungchia 1,000. Workers are mostly paid by piece-rate, and the scale of wage varies with individual skill and with the quality of the mats made.

The following table shows the matting factories now operating in Ningpo, and Wenchow (Yungchia) and particulars of their activities:—

MATTING FACTORIES IN CHEKIANG

Factory	Established	Capital	Workers
NINGPO			
Ming Hsin ..... (明 新)	1927	$4,000	51
Ta Sheng ..... (大 生)	1926	2,000	67
Chin Yuan Chi .... (金 源 記)	1927	1,000	37
Pao Hsing ..... (寶 星)	1927	2,000	33
Teh Ta ..... (德 大)	1932	2,000	22
Chung I Kung Chi . (中 一 公 記)	1918	48,000	400
YUNGCHIA			
Kiang Chü Sheng . (江 聚 盛)	1920	5,000	100
Chian An ..... (泉 安)	1927	5,000	40
Teh Ta ..... (德 大)	1926	1,000	30
Tung Hua ..... (同 華)	1926	"	40
Li Fa Yuan ..... (李 發 源)	——	500	20
Li Yung Sheng ... (李 永 生)	——	500	20
Yü Chi ..... (裕 記)	——	1,000	30
Tung Wan Hsing .. (同 萬 興)	——	500	20
Fu Ho Feng ..... (傅 合 豐)	——	700	15
T'ien I ..... (天 一)	——	500	12
Chang Wan Shun .. (張 萬 順)	——	100	5
Chen Yung Hsing . (陳 永 興)	——	200	5
Ho Hsing Lu Chi .. (合 興 蘇 記)	——	500	13
Tung Shun ..... (同 順)	——	100	5
Hsin Shun Fa ..... (新 順 發)	——	500	15
Chang Teh Hsing .. (章 德 興)	——	700	15
Ho Hsing Fu Chi .. (合 興 福 記)	——	500	15
Hsin Shun Mei .... (新 順 美)	——	500	15
Yung An ..... (永 安)	——	500	10
Ho Yung Cheng ... (合 永 昌)	——	3,000	25
Jen Jun Chang .... (仁 潤 昌)	——	700	15
Chang An Chi ..... (張 安 吉)	——	500	15
Hsin Ta Chang .... (新 大 昌)	——	200	5
Yü Shun Hsing .... (余 順 興)	——	500	10
Chang Hung Shun . (張 鴻 順)	——	500	15
An Chi Li ..... (安 吉 里)	——	500	15
Chung Hsing ..... (中 興)	——	500	15
Jen Kuang Hua ... (仁 光 華)	——	1,000	18
Hsin Yung Yuan .. (新 永 源)	——	300	5
On Mei ..... (歐 美)	——	1,000	15
Yuan Chang Teh .. (元 昌 德)	——	2,000	20
Kung I ..... (公 益)	——	500	15
An Chia Li Hsin Chi (安嘉利新記)	——	500	15
YUYAO			
Hua Ming ..... (華 明)	1926	$5,000	150

The best year for the straw hat industry was 1927, when a total of 286,590 persons were reported as engaged in this business. At the present time, however, owing to the trade slump the workers engaged in this line of industry have decreased by 70 per cent. The following table shows the number of workers engaged in hat-making business in various districts of Chekiang in 1927:

	Workers
Ningpo	65,400
Yüyao	27,290
Linhai	39,100
Wenling	31,500
Ninghai	13,000
Huangyen	45,280
Lots'ing	26,720
Yungchia	24,000
P'ingyang	10,000
Juian	4,300

In making straw hats workers supply their own stocks of raw material. An expert worker can finish a hat in five days, while a less experienced one turns out three hats in a month. Wages are paid by piece-rates, which vary with the grade of hat. For those made of *chin ssu ts'ao* —buntal fibre—the rate is $1.90, while for hats made of *po li ts'ao* or "glass" grass (玻璃草) the rate is $2 each, and a worker gets $1.50 for a hat made of *ma ts'ao* (麻草).

Straw hat manufacturers in Chekiang are established in Ningpo, Yüyao, Linhai and Yungchia. There are about 130 factories operating in Yüyao, with capital varying from $2,000 to $20,000, 40 in Ningpo, 66 in Haimen and vicinity, and 5 in Yungchia. The aggregate capital is apportioned as follows: Yüyao, $69,000, Ningpo, $210,000, Haimen, $390,000, and Yungchia, $20,000. The following is a list of the hat factories now operating in Ningpo:

	Established	Capital	Annual Output
Hua Fu ..... (華孚)	1924	$ 5,000	$30,000
Lien Chang ..... (聯昌)	1926	5,000	23,000
Chia Tai ..... (嘉泰)	1927	10,000	35,000
Tai Feng ..... (泰豐)	1927	6,000	45,000
T'ien Lung ..... (天隆)	1926	10,000	40,000
Yung Feng ..... (湧豐)	1927	5,000	20,000
Yuan Tai ..... (源泰)	1928	5,000	22,000
Heng Tai ..... (恆泰)	1928	5,000	17,000
Tien Shen ..... (天森)	1931	1,000	12,000
Kun Ho ..... (坤和)	1926	10,000	40,000

RAW MATERIAL

The raw material used for making coarse and old-style the *hsi ts'ao* or "mat" grass (蓆草) with *lung hsü ts'ao* (龍鬚草) for printed mats and *san chueh ts'ao* (三角草) for soft mats, while for making straw hats the raw material consists of buntal fibre, (*chin ssu ts'ao*), "glass" grass (玻璃草), *ma ts'ao* (麻草) and *t'eng ts'ao* (藤草).

"Mat" grass grows in Huangshant'ou (璜山頭), of Huangyen, and Ningpo, attaining a height of about five feet. The farmers gather this grass in early summer, and after packing it into bundles sell to agents at Huangkulin (黃古林) which is the chief centre for marketing straw. After drying the grass these agents sell to merchants, and to every dollar's worth of straw the agent adds four cents commission. The annual production of straw at Ningpo is estimated at 50,000 piculs, with 9,000 piculs from Huangshant'ou and vicinity, the price per picul ranging from $3 to $6 according to quality. The aggregate value amounts to $200,000, of which 70 per cent is used in Ningpo for making mats, while the remainder is exported to Yüyao, Yungchia and Tientsin.

The *lung hsu ts'ao* is finer and longer than the "mat" grass or *hsi ts'ao* (蓆草) and is frequently found in Yungchia and T'singt'ien the former being also the centre of distribution. The price varies from $5 to $8 per picul.

San chueh ts'ao (三角草) or *hsien ts'ao* (鹹草) is produced in Yungchia to the extend of 5,000 piculs a year.

Ma Yuan (馬 園) in Ningpo also produces this variety for local consumption. The price of this straw ranges from $5 to $8 a picul.

Materials for manufacturing hats are imported. *Chin ssu ts'ao* comes from Manila at $13 a kilogram, "glass" grass from Switzerland and Germany at $14 per kilogram, and *ma ts'ao* from Manila at $130 per bundle of 200 pounds. The annual consumption of these straws in Chekiang is as follows:

	hsi ts'ao	*lung hsu ts'ao*	*san chush ts'ao*	*po li ts'ao*	*chin ssu ts'ao*	*ma ts'ao*
Ningpo	$150,000	$3,000	$4,200	$655,875	$675,000	$59,400
Yüyao	3,000	1,100	—	84,450	2,025,000	7,920
Yungchia	30,000	80,000	20,000	—	—	59,400
Linhai	—	—	—	32,794	50,625	128,581
Huangyen	—	—	—	32,794	60,750	142,560
Wenling	—	—	—	21,862	33,750	95,050
Lot'sing	—	—	—	21,862	8,438	59,400
Ninghai	—	—	—	21,862	33,750	23,760
Pingyang	—	—	—	—	—	19,800
Juian	—	—	—	—	—	9,900
Total	183,000	841,000	24,200	874,499	2,887,363	605,711

Straw mats may be classified as old-style, printed, and soft. The first are made of ramie and *hsi ts'ao*, the latter being soaked in water before weaving, which is done by two persons, who can turn out two or three mats a day according to the length and width. Farmers devote their spare time to making matting, which forms a regular side-line occupation except when very cold weather makes weaving impossible.

The printed variety is woven with *hsi ts'ao* and *lung hsü ts'ao* as woof and with cotton yarn and thread as warp. The method of weaving is the same as in making old-style mats. The yarn generally used is 22 and 24 counts and is mixed with thread in making mats of this description. A printed mat of the coarse variety takes about three or four catties of *lung hsu ts'ao* and 20 cent's worth of cotton yarn, while for a finer quality takes one or two catties of the *lung hsu ts'ao* and 40 cents worth of cotton yarn. The weaving is largely done by women, with the rolling of the finished matting done by men. Red and green are two

dyes commonly used in printing, the former fetching $6 a tin and the latter $2.

The soft mat is an imitation of mats made in Taiwan, (Formosa), hence is also known as *tai hsi* (台 席). The material used for making this mat is *san chueh ts'ao*, and the process is more complicated than for the two previously mentioned. The complete process requires 16 different operations, the weaving being done by men and the other operations by women. Printed mats are of two designs, stripes and checker sizes ranging from 65 to 36 inches.

The process of manufacturing hats is much simplier than that of mat-making and any ordinary person after about two weeks' practice can make a hat.

The matting made in Chekiang includes bedding, pillows, cushions, slippers, etc., prices being given below:

BED MATTING.

Size	Prices
1' 6"	$ 0.48—$ 0.67
2'	0.52— 0.72
2' 2"	0.54— 0.77
2' 4"	0.60— 0.90
2' 6"	0.65— —
2' 8"	0.87— 1.16
3'	1.25— 1.45
3' 2"	1.30— 1.75
3' 4"	1.33— 1.82
3' 6"	1.42— 2.00
3' 8"	1.50— 2.20
4'	1.55— 2.30

PILLOWS.

1' 2"	$ 0.07—$ 0.16
1' 4"	0.09— 0.17
1' 6"	0.10— 0.19
1' 8"	0.13— 0.21
2"	0.14— 0.24

SOFT MATS.

36"	$ 8.50—$ 9.00
42"	9.50— 10.00
48"	10.50— 11.00
54"	12.50— 13.00
60"	13.50— 14.00
65"	16.50— 17.00

MISCELLANEOUS STRAW PRODUCTS.

	Price per piece
Round *lung hsu* Cushion (1' 2")	$0.38
Square *lung hsu* Cushion (1' 2")	0.38
Rectangular *lung hsu* cushion	0.38
Rectangular *lung hsu* cushion	0.38
Chair cushion	0.34
do	0.38
Chin ssu hat	4.00
White ramie hats	2.50
"Glass" grass hats	4.50
Chin ssu & artificial silk hats	8.00
Fine chair matting	04.0
Fine printed slippers	0.30

The annual production of mats in Ningpo and Yungchia amounts to 5,000,000 pieces, of which half are shipped to outside markets. According to a Customs report, the export of mats from Ningpo and Wenchow during 1929, 1930 and 1931 is as follows:

	1929		1930		1931	
	Pieces	H.K. Tls.	Pieces	H.K. Tls.	Pieces	H.K. Tls.
Ningpo	2,397,000	599,250	2,108,000	210,800	1,728,000	237,365
Wenchow	1,630,000	326,000	1,747,000	524,100	1,809,000	542,200
Total	4,027,000	925,250	3,855,000	734,900	3,636,000	780,065

Since 1917 the export of straw hats has decreased from 5,000,000 pieces to 1,600,000 pieces. The following table shows the production of straw hats in 1927 and 1931:

	Pa Li Hats		*Chin Ssu* Hats		*Ma Ts'ao* Hats	
	1927	1931	1927	1931	1927	1931
Ningpo	300,000	120,000	400,000	300,000	300,000	200,000
Yüyao	40,000	10,000	1,200,000	326,000	40,000	30,000
Linhai	15,000	5,000	30,000	15,000	694,430	184,000
Huangyen	15,000	4,000	36,000	22,000	720,000	150,000
Wenling	10,000	3,000	20,000	10,000	480,000	80,000
Lot'sing	10,000	2,000	5,000	2,000	300,000	60,000
Ninghai	10,000	1,000	20,000	6,000	120,000	25,000
Yungchia	—	—	—	—	300,000	20,000
P'ingyang	—	—	—	—	100,000	15,000
Juian	—	—	—	—	50,000	10,000

DISTRIBUTION

Straw hats made of *chin ssu ts'ao* are exported to Europe and the United States, with a small number sold locally. In 1928 the Government declared exemption from tax on hats of this description exported to foreign countries, but owing to the general trade depression all over the world the export of hats has declined considerably. According to Customs returns for 1932 hats made of *chin ssu ts'ao* and of ramie and *chin ssu ts'ao* mixed exported to the United States amounted to 591,000 pieces, to Great Britain 526,000, to France 414,000, and to Canada over 10,000.

In addition of those disposed of locally, mats are shipped to Kiangsu, Hopei, Kuangtung, Hupeh and Hunan. Mats sent to Shanghai, Chinkiang, and Nanking for redistribution in Kiangsu province vary from 1,730,000 to 2,130,000 pieces a year; to Canton, Amoy and Swatow (for distribution in Kuangtung and Kuangsi) 500,000 pieces; to Tientsin, (for distribution in Hopei) 400,000 pieces; to Shashih, Ichang, and Hankow (for distribution in Hunan and Hupeh) from 380,000 to 600,000, to Kiukiang (for distribution in Kiangsi), from 110,000 to 130,000; to Wuhu (for distribution in Anhui) from 70,000 to 90,000, and to Chungking (for distribution in Szechuan) from 20,000 to 40,000 pieces. Most of the mats for export to foreign countries are first shipped to Hongkong, whence they are re-exported principally to Siam and Singapore. In 1931 mats shipped abroad amounted to the value of Hk. Tls. 7,249,000 but decreased in 1932 to Hk. Tls. 2,290,000.

TRADING METHODS.

Most of the business transactions are handled during March, April, and May. Farmers and peasants sell the finished mats for cash to mat dealers or *hsi hong* (席行) who in turn sell to retail merchants. Mats made by factory labour are sold direct to merchants, who pay half the price on delivery and the balance either on the occasion of the three festivals of the year. Matting factories also execute special orders from merchants, and collects payment on delivery. Old-style mats are packed in bundles

of from 50 to 100 pieces, while printed mats are packed in wooden boxes.

Over 60 mat dealers or *hsi hong* are now operating in Ningpo, as shown in the following list:—

		Capital
Tung Fu Tai	(同福泰)	$ 300
Chien Hsing Hsiang	(乾興祥)	500
Lin Wan Shun	(林萬順)	1,500
Lin Yuan Tai	(林源泰)	2,000
Chou Yung Hsing	(周永興)	300
Chen An Hsiang	(震安祥)	1,000
Shui Hsieh Hsing	(水協興)	800
An Tai	(安泰)	1,200
Wan I	(萬億)	2,000
Jen Heng Tai	(任恒泰)	2,000
Yü Tai Hsiang	(裕泰祥)	2,000
Yü Yuan Hsiang	(裕源祥)	1,000
An Kang Hsiang Chi	(安康祥記)	500
Yü Mao Hsing	(裕茂盛)	500
Chin Teh Li	(金得利)	400
Cheng Ho	(正和)	1,600
Chang Hung Cheng Chang Chi	(張鴻成昌記)	5,500
An Chi	(安吉)	5,000
An Sheng Heng Chi	(安生恒記)	2,000
Jen An Hsing Chi	(仁安鑫記)	3,000
Shui T'ien Chi	(水天吉)	800
An Yü	(安餘)	500
Heng Sheng T'ai	(恒昇泰)	3,500
T'ai An Hsiang	(泰安祥)	800
I Ch'ien Shen Chi	(義全森記)	12,000
Wan Shun	(萬順)	1,300
An Fu	(安孚)	2,000
Yü Shun Teh Chi	(餘順德記)	2,400
Chi Chuan Chang Chi ...	(其全長記)	5,000
Heng Yü	(恒餘)	2,000
Wan Sheng Hsiang Chi ..	(萬昇祥記)	3,000
Yü Sheng	(餘生)	500
Wang Wan Li	(王萬利)	200
Shun Feng Hsiang	(順豐祥)	400
Chi T'ai	(吉泰)	800
Hua Sheng	(華盛)	200
Yü T'ai Yü Chi	(裕泰誠記)	800
Sheng Mao Hsiang	(蓀茂祥)	800
Chung Hsing	(中興)	800
Chen An Hsiang Heng Chi	(震安祥恒記)	2,000
An Yuan	(安元)	500
Yuan Ta	(源大)	5,000

		Capital
Lung Sheng	(隆 生)	$ 3,000
Wu Mao Chi	(吳 茂 記)	1,000
Wu Shen Chi	(吳 愼 記)	1,000
Yang Wan Li	(楊 萬 里)	2,500
Sheng Feng	(升 豐)	2,000
Han Yuan Mao	(韓 源 茂)	2,000
Han Hsing Lung	(韓 興 隆)	2,000
Shu Sheng T'ai	(舒 升 泰)	1,000
Heng Sheng	(恆 昇)	10,000
Ch'i Ch'ang	(其 昌)	1,000
Chien Heng	(乾 亨)	2,000
Tsun Mao	(春 茂)	7,000
Yuan Hsing	(元 興)	3,000
An Hsing	(安 興)	1,000
Tung Sheng	(東 昇)	5,000
Chou An Chuan	(周 安 全)	3,000
Yuan Ch'ing	(元 慶)	2,000
Chen T'ai	(震 泰)	1,000
Chang Hui T'ai	(張 惠 泰)	1,000
Chang T'ung Ho	(張 通 和)	2,400
Shih Shun T'ai	(施 順 泰)	4,000
Ch'en Mao Ch'ang	(陳 茂 昌)	4,000
Shih K'un Fang	(施 昆 房)	10,000
Shih Hsing Lung	(施 興 隆)	6,500
Shih Teh T'ai	(施 德 泰)	8,000
Teh Yü	(德 裕)	8,000
Hsieh Teh Ta*	(協 德 大)	2,000

*In Huangyen

CHAPTER XXVIII

STRING AND CORD

THE MAKING of string and cord is one of the secondary occupation of farmers, being entirely a home industry, accurate statistics are not available. Generally speaking, this handicraft may be divided into four groups, namely making silk thread, silk and intestine string, cotton yarn string, and coir-fibre cordage.

SILK THREAD

Chekiang being a silk-producing province, the making of silk thread is common everywhere, especially in Hangchow, Tungyang Yungk'ang, P'ukiang, etc. This industry has been followed in Hangchow and vicinity for several hundred years, and nearly every family is partly engaged in it, in addition to those wholly dependent upon it. The raw material, fine silk, is obtained from Haining, Hsiashih, and other places, and is distributed by thread dealers, to those engaged in this work who are paid about 30 to 40 cents a day. In days gone by the value of the silk thread trade of Hangchow amounted to $800,000 a year, but with the introduction of imported thread and cord, the native product has been largely displaced, and the use of fancy silk threads for embroidery and knitting has also greatly decreased. The diminished consumption of this product has very unfavorably affected the industry, silk thread being now only used for sewing silk wearing apparel. There are 15 silk thread makers in Hangchow, of which the Chang Yuan Hsing (張元升), Wen Ch'eng (文成), Ta Sheng (大 升) and Yuan Sheng (元 升) are the most important. Owing to poor business, these firms also handle other lines of articles, although silk thread used to be their sole concern, and the annual business done in silk thread during the last few years has been only a little over $300,000. In Tungyang there are more than 20 silk thread makers, the more important being the Chin Ch'i Ch'ang (金其昌),

Hsü I T'ai (許怡泰), Wei Hsiang Yuan (韋祥源), and over 350 families engaged in this craft. The annual production is about 8,800 catties, valued at about $84,000. Silk is bought from local reelers, and in Chuch'i at about $300 per picul and the finished product is sold in Lanch'i, T'aichow, and Fukien porvince, trade being most brisk during October. In Yungk'ang, the most important dealers are the Wang T'ung T'ai (王同泰), Hu Yü Tai (胡裕泰), K'ung Chin Ta (孔錦大), Hsu T'ung Mei (徐同美), and T'ung Sheng Ch'ang (同升昌), their aggregate capital being over $10,000. These firms collect silk thread from families taking this up as a secondary occupation, and the annual output is estimated at 600 catties, valued at about $7,000. Silk for making thread is obtained from Fuyang, Lanch'i, Iwu, and other *hsien*, and the product is sold locally and in Chinyun. These are ten silk thread makers in P'ukiang, producing about 1,000 catties of thread annually, valued at about $10,000, sold locally and in Lanch'i, and used chiefly for sewing, but also for embroidery and in women's hairdressing.

SILK AND INTESTINE STRINGS.

Silk strings are used for many musical instruments, and in the Hangchow Municipality there are two makers of music strings, the Fu T'ai Ch'ang (復泰昌) and Lao San Hsin (老三新), with an aggregate capital of $2,500. The output of these two firms is valued at about $16,000 a year, and is sold chiefly in Kiangsi and Fukien provinces. The materials used are silk and glue, the consumption of farmer being about 700 catties annually.

Strings made from sheep intestines are used for bowing cotton, but the trade is now very small, with only one maker in Hangchow, the Shih T'ien Shun (施天順). This is an establishment started in 1860, with very small capital, and is handling business amounting not more than a few thousand dollars a year. Work is carried on only for about six months, when an ample supply of raw material is available. The intestines are bought from Hangchow and Shaohsing, and the annual output is about 1,000 strings, sold at a dollar each.

COTTON CORD.

Cotton cord is used for dressing the hair by women. and is made of cotton yarn of 10 and 16 counts. The trade is in a very bad condition, as imported wool yarn is taking the place of cotton cord, while its use in hair-dressing has decreased. In Hangchow only one maker is now in business, the Yuan Mao T'ai (元懋泰), with a capital of $500, turning out 7,200 catties of cord annually, worth about $6,400. The product is sold locally and in near-by *hsien.*

DOIR-FIBRE CORDAGE AND ROPE.

There are 23 makers of coir-fibre and flax cord in Hangchow, the more important being the Sun Cheng Hsing (孫正興), Yuan Teh Shun (袁德順), Sun Pao Hsing (孫寶興), Chang Fu Hsing (張復興), P'ei Shun Hsing (裴順興), Wang T'ien Shun (王天順), Tung Shun Ch'ang (董順昌), Yuan Ch'ang Hsing (袁長興), Wei Wan Hsing (魏萬興), Lin Shun Hsing (林順興), Ch'uan Shun Hsing (全順興) and Wei Lung Chi (魏龍記). All these firms operate on a very small scale, producing about $20,000 worth of cord annually. Those engaged in making flax cord and rope are 27 in number, producing cordage worth about $22,000 a year. Machines for making cord were originally bought from Japan, but Chinese made machinery is now more largely used, costing less than $20 each. The cord is sold in Hangchow, Chiahsing, Wuhsing, Wusih, Tungchow, P'inghu, Linghu, etc.

CHAPTER XXIX

RATTAN AND BAMBOO WARE

RATTAN and bamboo wares are famous Chekiang products, with Hangchow leading in production, followed by Ningpo and Wenchow. According to the class of goods manufactured, dealers are classified into *pien mieh cho* (匾蔑作), *yuan chu cho* (圓竹作) *hsi mieh cho* (細蔑作), *chu p'eng cho* (作篷作), *t'ien chu k'uai cho* (天竺筷作) and rattan ware *cho* (藤器作). The *pien mieh cho* manufacture different kinds of bamboo baskets; the *yuan chu cho* makes beds and chairs and the *chu p'eng cho* makes blinds, mats, etc.

The *pien mieh cho* is found practically everywhere throughout the province, with Hangchow leading and followed by Ninghsien and Yungchia. There are about 100 *pien mieh cho* operating in Hangchow, with about 10 and 40 in Ninghsien and Yungchia respectively. In regard to *hsi mieh cho*, there are about 20 of these establishments in Hangchow, with 10 in Ninghsien and a few in Ch'enghsien and Shaohsing. Among the 20 chopstick-makers found in Hanghsien, at the largest are T'ang Shun Hsing (湯順興) and Ch'en Yung Hsing (陳永興) Dealers in rattan ware are distributed as follows: Hangchow 42, Ninghsien 3, and Yungchia 18. Combs manufactured in Chekiang are not so famous as those of Ch'angchow, Kiangsu province, and the makers are scattered about in Ninghsien and Hangchow; in the latter place the chief makers are Lao Wang Ta Hsing (老王大興), Yao Teh Hsing (姚德興), and Wang Lao Niang Ch'iu Chi (王老娘邱記).

In the rattan and bamboo ware business most of the enterprises are individually owned, and capitalized at a maximum of $3,000 and employing each from 3 to 10 operatives. Wages are paid either by the day or month,

or at piece rate. Day wages range from 12 to 40 cents, and under the piece rate system wages are paid monthly, varying from $8 to $24, the worker providing himself with board while the employer supplies free lodging. Under the monthly wage system, ranging from $8 to $14, workers also receive board and lodging. The working day is 11 hours. In making chopsticks women are employed and paid by piece rate. The following is a list of the rattan and bamboo ware dealers operating in Chekiang, together with other particulars:—

RATTAN AND BAMBOO WARE MAKERS IN CHEKIANG

Manufacturers		Annual Output
Hangchow.		
Ch'i Jui Chi	(祁瑞記)	$ 1,500
Mao Chü Hsing	(毛聚興)	2,000
Ch'en Chü Hsing Branch	(陳聚興分號)	2,000
Lao Shun T'ai	(老順泰)	1,500
Yang Yung Hsing	(楊永興)	1,400
T'ung Yuan	(同源)	1,500
Tu Yung Hsing	(杜永興)	2,000
Ch'ang Ch'ien Yuan	(張萩元)	3,000
Shen Shun Hsing	(沈順興)	2,000
Lo I Sheng	(駱義盛)	2,000
Chen Hsing	(振興)	5,000
Liao Shun Hsing	(廖順興)	2,000
Ch'ien Hsieh T'ai	(錢協泰)	4,000
Chou Shun Hsing	(周順興)	3,000
Shou Hsiang Ho	(壽祥和)	2,800
Yuan T'ai	(元泰)	3,000
Kao Hsiang T'ai	(高祥泰)	7,000
I Ho Yung Chi	(義和永記)	2,500
Feng Hsiang Hsing Chi .	(風祥興記)	2,000
T'ang Yuan Hsing	(唐源興)	4,000
Ma Sung Yuan	(馬松源)	4,000
Chiang I Ch'ang	(蔣義昌)	4,500
Yü Wan Mao	(餘万茂)	3,500
Shou Hsiang Ho Branch ..	(壽祥和分號)	4,000
San Ho	(三和)	1,000
T'ai Ch'ang	(泰昌)	3,000
Chao Ch'uan T'ai	(趙泉泰)	1,500
Ch'en Yung Mao	(陳永茂)	2,000
Kao Shun T'ai	(高順泰)	2,400
Chu T'ien Hsin	(左天信)	1,500
Ch'ang Chü Hsing	(張聚興)	2,000
Wang Shen T'ai	(王森記)	1,000
Wang Chin Ch'ang	(汪錦昌)	6,000

Manufacturers		Annual Output
Mao Ch'ang	(茂 昌)	$ 3,700
I Ch'ang Sheng Chi	(義昶昇記)	2,000
Chin Wan Hsing	(金萬興)	2,000
Lin Shun Hsing	(林順興)	1,000
Ch'en Yuan Shun	(陳元順)	1,000
Yung Sheng	(永 昇)	1,500
Hsü Hsing Hsing	(許興興)	1,000
Ch'i Shen T'ai	(戚森泰)	1,080
Lu San Ho	(陸三和)	1,000
Lu Fu Lin	(魯福林)	1,500
Meng Teh Hsing	(孟德興)	1,500
Fang Li Chi	(方利記)	1,500
Li T'ung T'ai	(李同泰)	1,000
Feh Hsing	(德 興)	5,500
Yung Sheng	(永 盛)	1,000
Chao Yuan	(兆 元)	1,000
Chien Sheng	(錦 成)	1,200
Chou Hung Sheng	(周宏盛)	1,000
Wang Jung Chi	(王榮記)	1,000
Yü Chin Chi	(俞久記)	2,000
Chou Shun Ch'ang	(周順昌)	1,000
Chang Fu Chi	(張富記)	2,000
Kun Yuan	(坤 源)	1,000
Ch'en Ch'ang Fa	(陳長發)	2,000
Chen I Hsing	(陳義興)	1,000
Sheng I Ch'ang	(盛義昌)	3,000
Wang Jung Chi	(王榮記)	3,000
T'ung Yuan	(通 源)	2,880
Han Pao T'ai	(韓寶泰)	1,000
T'sao Wan Ch'ang	(曹萬昌)	1,000
Wang Shun T'ai	(王順泰)	2,000
Wang Shun Hsing	(王順興)	1,500
Tu Cheng Hsing	(杜正興)	1,100
Sun Shen Chi	(孫森記)	1,000
Cheng T'ai	(正 太)	1,000
Kuo Shun Chi	(郭順記)	1,000
Ch'en Shun Hsing	(陳順興)	1,000
Shang Shun T'ai	(商順泰)	8,000
Yen Teh Hsing	(尹德興)	2,000
Yuh Shun Hsing	(葉順興)	1,000
Hsia Chien Chi	(夏餞記)	2,000
Shen Tsin An	(沈俊安)	3,000
Yang Sun Hsing	(楊順興)	1,400
Yen Teh Hsing	(尹德興)	1,400
Ch'ien Shun Chi	(錢順記)	1,500
Ch'ien Yü Hsing	(錢裕興)	1,500
T'ang Sung Sheng	(唐松盛)	2,600
T'ung Chi	(同 記)	5,000
Tung Shun Hsing	(董順興)	1,000
Hsiang Ho	(祥 和)	4,000

Manufacturers		Annual Output
Wang Yü Chi	(汪裕記)	$2,000
Ling Wan Hsing	(凌萬興)	4,000
Wan T'ai Hsiang	(萬泰祥)	7,000
Fu Ch'ing Chi	(傅慶記)	4,000
Lo Wan Shun	(樂萬順)	1,200
Ho Ch'ang	(合昌)	1,000
Chen I Sheng	(鎮益昇)	2,000
Hsiang Ho	(祥和)	2,000
T'ien Jun Hsiang	(天潤祥)	4,500
Hang Cheng T'ai	(杭正泰)	5,000
Pao Yung Ch'ang	(鮑永昌)	1,000
Chang Heng Yuan	(張恆源)	1,000
Chao Heng Ch'ang	(趙恆昌)	1,500
Chu Wan Kui	(朱文貴)	1,000
Hsi Pao Feng	(徐寶豐)	3,000
Meng Yuan Hsing	(孟源興)	1,500
T'ung Hsing	(同興)	1,200
Ch'en Chin Yuan	(陳錦源)	2 500
Hu Kung Shun	(吳公順)	1,200
Shen Lung Hsing	(順隆興)	3,000
Ku Ming Chi	(顧明記)	4,600
Hsieh T'ai	(協泰)	3.000
Fu Shen Hsing	(傅順興)	1.000
Yü Heng Hsing	(俞恆興)	1,500
Chang Lung T'ai	(張隆泰)	1,000
Yung Shun Hsing	(永順興)	1,500
Yang Shem T'ai	(楊順泰)	1.000
T'ang Shun Hsing	(同金興)	2,500
T'ao Heng Mao	(屠恆茂)	1,500
Teh Hsing Ho	(德興和)	4,500
Shen Teh Hsing	(沈德興)	2,500
T'ang Shem Hsing	(湯順興)	2,500
Ku Yü Feng	(顧裕豐)	4,800
Hsia Sheng Sheng	(謝生昇)	6,500
Ch'en Teh Hsing	(陳德興)	2.000
Sun Chin Yuan	(孫錦源)	1,300
Pien Fu T'ai	(邊福泰)	1,000
Chü Ch'ang	(聚昌)	1,000
Fu T'ung	(阜通)	3,500
Ts'ao Ho Hsing	(曹合興)	1,500
Ta Heng	(大亨)	1,600
Chang Shao Pin	(張少彬)	1,000
Lou Wan Hsing	(樓萬興)	1,000
Ch'en Ch'ang Hsing	(陳長興)	2,000
Wu Mao Chi	(吳茂記)	7,000
Wei Yuan Mao	(魏源茂)	2,000
Chin Yuan Hsing	(金源興)	1,900
Fu Lung Hsing	(傅隆興)	1,000
Mao Hsing T'ai	(毛興泰)	5,000

Manufacturers		Annual Output
Chu Hsiu Chi	(祝秀記)	$ 1,000
Chou Chin Chi	(周金記)	1,000
Chiu Shun Hsing	(裘順興)	2,000
Chang Hsing Chi	(張鑫記)	1,000
Mao Yuan	(茂源)	3,000
Hsin Lin Co.	(新林公司)	2,500
Li Hsing Ch'ang	(立興昌)	1,000
Hsü Mei Chi	(許美記)	20,500
T'ung Ho	(同和)	2,700
I Chia Hsiang	(異家香)	1,800
Kao Li Ch'ang	(高利昶)	1,000
Wu Jung Shen	(吳榮森)	1,500
Jui Ch'ang Jung	(瑞昌榮)	1,800
Ch'en Shen Mao	(陳森茂)	1,000
Jung Shen Hsiang	(榮順祥)	1,000
Stsieh Shem Hsiang	(協順祥)	1,000
T'sai I Chi	(蔡義記)	1,000
Chien Hsin T'ai	(錢協泰)	4,000
Yuan Hsin Yuan	(袁信源)	1,000
Hsin Shun T'ai	(新順泰)	1,200
Yü Feng Tsun Chi	(裕豐孚記)	18,757
Ch'en Yin Chi	(陳銀記)	10,000
Lao Feng Hsiang	(老鳳祥)	2,000
P'an T'un Chi	(潘春記)	1,000
Hung Kuan Fu	(洪觀福)	1,000
T'ao Wan Feng	(陶萬豐)	1,200
T'sai Wan Shun	(蔡萬順)	1,000
Ch'en Chü Hsing	(陳聚興)	1,200
Hsiang Feng	(祥豐)	2,000
Sun Ho Hsiang	(孫和祥)	2,700
Chu Ch'uan Chi	(朱源記)	1,000
Ch'en Yung Hsing	(陳永興)	1,800
Chao Jih Hsin	(趙日新)	1,000
Chao T'ies Sheu	(趙天申)	1,000
Ch'en Fu Hsing	(陳福興)	1,000
Ch'ang Teh Yü	(鄭德裕)	1,000
Pao Chin Hsing	(包金興)	1,000
Wang Chin T'ai	(王錦泰)	4,000
Wu Shen Chi	(鄔森記)	2,000
Chiang Yuan Chi	(蔣源記)	1,000
T'sin To Chi	(秦多記)	3,000
Huang Ying Chi	(黃應記)	2,000
Ch'iu Wu Chi	(邱五記)	1,000
Yuan Shun Hsing	(袁順興)	1,000
Hsia Wan Lung	(夏萬隆)	2,000
Shih Chü Yuan	(石顧源)	1,200
Hsia Fu Hsing	(夏復興)	2,000
Chiang Yuan Feng	(蔣源豐)	1,200
Feng Ah Nguo	(封阿鍔)	1,000
Ch'iu Shun Ch'ang	(裘順昌)	1,000

Manufacturers		Annual Output
Mao Hsing Chi	(毛興記)	$ 1,000
Shen Yuan Hsing	(沈元洪)	1,000
Ho Shun T'ai	(何順泰)	2,000
Hsü Wei Ch'i	(徐渭溪)	2,000
Chu Shen Chi	(朱森記)	2,000
Ch'en Pao Chi	(陳寶記)	2,000
Yang Wei King	(楊章廣)	1,000
Ch'ang Hsing	(昌興)	1,400
Hsiang T'ai	(祥泰)	1,700
Kung Shun	(公順)	2,000
Ch'ien Yu Chi	(錢有記)	1,300
Shen Yü	(愼裕)	1,000
Chu Jung Ch'ang	(朱榮昌)	1,000
Feng Shun Ch'ang	(封順昌)	1,000
Fu Fu Hsing	(傅福興)	1,000
Mao Chin P'u	(毛錦甫)	1,000
Wang Wan Li	(王萬里)	1,000
Feng Shen Ho	(馮森和)	1,000
Ma Chü Hsing	(馬聚興)	1,500
Fu Hsing	(復興)	1,500
Chiang Fu Hsing	(姜福興)	1,000
Li Cheng Hsing	(厲正興)	1,000
Lien I	(聯益)	2,000
Tu Cheng Hsing	(杜正興)	2,500
Hsin Hai Chi	(新海記)	2,000
Kuang Ch'ang	(廣昌)	1,800
Wang Lao Niang	(王老娘)	3,000
Chin Jun Ch'ang	(錦潤昌)	3,000
Yao Teh Hsing	(姚德興)	5,000
Ningpo.		
T'ung Sheng Hsiang	(同升祥)	1,000
Ho Hsing	(合興)	10,000
Yuan Ho	(源和)	10,000
Wan Ho	(萬和)	5,000
Cheng Wan Hsing	(鄭萬興)	600
Shen Sheng	(牲生)	6,000
Shun T'ai	(順泰)	4,000
Ch'ien T'ai	(本太)	6,000
Shen Hao	(森號)	6,000
Ta Hsing	(大興)	7,000
Chang Yung Ho	(張永和)	1,000
Chang Hsing Lung	(張興隆)	1,000
Chou Shun Ho	(周順和)	1,000
Yü Wan T'ai	(俞萬泰)	1,000
Yungchia		
Hsiang Cheng Shun	(項增順)	2,000
Chin I Hsing	(金義興)	5,929
Shen Yuan Hsing	(森源興)	2,000
Tung Ta Hsing	(東大興)	1,615
Yung Yuan Ch'ang	(永源昌)	12,184

Manufacturers		Annual Output
Kuang Chin Chang	(廣進昌)	$ 4,800
Kuang Yuan Feng	(廣源豐)	1,000
Hu Ch'en Fa	(胡振發)	1,567
Hsiang Hsing Hsing Chi	(祥興興記)	10,264
Hsin Hung Fa	(新宏發)	2,800
Shen Li	(勝利)	12,500
T'ung Li	(同利)	35,500
Ch'en Hsing	(振興)	4,500

SUPPLIES OF RAW MATERIAL

Mao chu (毛竹), *tan chu* (淡竹), *k'u chu* (苦竹) and *chien chu* (剪竹) are used in the manufacture of bamboo ware. The *mao chu* is used by *pien mieh cho, tan chu* by *yuan chu cho* and *peng cho, k'u chu* by *yuan chu cho* for making baskets of all kinds, while the *chien chu* is used only for making chopsticks. The material used for making rattan ware includes *tan chu, k'u chu,* and rattan imported from malaya. Supplies obtained in Yungchia, Ninghsien and Hangchow come from Shanghai. For making combs *huang yang mu* (黃楊木), *tsao mu* (棗木), *shih nan mu* (石楠木), and *li mu* (梨木) are used. The *huang yang mu* is found in western part of Chekiang, *tsao mu* at Haining, *li mu* at Chuch'i and Ts'ingt'ien, while the *shih nan* is obtained in Hangchow and vicinity.

The *mao chu* grows on mountain ranges in the southern and western parts of Chekiang, and costs about $1.30 per 100 catties, while for *tan chu* the price varies from $1.30 to $2. The bamboo used for making *t'ien chu* chopsticks is shipped by junk from Ninghsien, Shangyü, and Chuch'i to Hangchow, and sold to chopstick makers at $15 or $16 per 10,000 pieces. Rattan is bought from Shanghai, the price ranging from $45 to $60 a picul including freight. Prices of the wood used in making combs are as follows: *nan mu* and *shih nan,* $5 per 100 catties; *feng mu* (楓木) $2, and *huang yang mu,* $40. The following table shows the annual consumption of bamboo, rattan, wood, and other materials:

	Bamboo	Rattan	Wood	Others	Total
Hangchow	$49,800	$25,800	$16,000	$1,800	$93,400
Ninghsien	23,000	9,000	— —	— —	32,900
Yungchia	21,800	25,200	—	—	47,000
Wuk'ang	300	—	—	—	300
Total	$95,800	$60,000	$16,000	$1,800	$173,600

PRODUCTION

In making into ware bamboo is first cut into blocks which are made into *mieh pien* (篾片) and *mien ssu* (篾絲) and polished before being joined to make the desired article, the quality of which depends largely upon the skill of the worker. In making rattan ware the canes are first stripped and plaited. In making chopsticks the skin of the bamboo first removed, after which the surface is carved with the design wanted. Most chopsticks are plain in color, but if colours are preferred, chemical dyes are applied. Over forty varieties of bamboo and rattan ware are manufactured in Hangchow, Yungchia, and Ningpo, prices ranging from 10 cents to several dollars apiece. The annual production is estimated as follows:

	Bamboo ware	Rattan ware	Bamboo Blinds and Matting	Chopsticks	Combs	*Chu Kou*	Total
Hangchow	$60,000	$91,570	$1,200	$50,000	$40,000	—	$242,770
Ninghsien	50,000	3,000	—	1,000	—	—	54,000
Yungchia	38,000	96,159	—	—	—	—	134,159
Wuk'ang	—	—	—	—	—	$1,200	1,200
Total	$148,000	$190,729	$1,200	$51,000	$40,000	$1,200	$432,129

DISTRIBUTION

The bamboo and rattan ware made in Chekiang are used locally with the exception of the chopsticks made in Hangchow, which have a large outside market. There are about 50 chopstick makers in Hangchow, their workshops being found in Ta Tsing Lane (大井巷), Tsing Ho Fang (清和坊), and vicinity. The business of these dealers is mainly with outside markets, while those established near

the West Lake cater more for local trade. Important markets for chopsticks are Tsinan, Nanking, Soochow, Tsingtao, Shanghai, Tientsin, Hankow, and Canton, with Shanghai the main center for distribution. Hangchow combs are also found in Ningpo and Shanghai, but the volume of this business is insignificant. Business in bamboo blinds is most brisk in summer, while for rattan ware the best season is in April, May and June.

Business transactions in bamboo and rattan wares are rather simple, bargains being concluded on the basis of cash payment. In the chopstick business, owing to its wide area, covering Tsinan, Nanking, Soochow, Tsingtao, Shanghai, Hankow, and Canton, orders are accepted from these places upon receipt of half the amount for the whole consigment, the balance being paid on delivery of the goods.

CHAPTER XXX

THE UMBRELLA INDUSTRY

UMBRELLAS made in Chekiang include the oiled paper and cloth varieties and the foreign-style article. Paper umbrellas were made in Chekiang many years ago, and formed one of the principal exports from that province. In Chekiang the umbrella industry is centered around Yungchia, Hangchow, and Ninghsien about the middle of the Ching Dynasty the paper-umbrella makers in Yungchia numbered 30, with 20 in Hangchow and about 10 in Ninghsien, and goods manufactured in Yungchia began to find a market in various foreign countries. The chief domestic selling centres at that time were Kiangsu and Chekiang, followed by Tientsin, Newchwang and Yingkow. In 1919 some Japanese merchants began to take an interest in paper umbrellas from Yungchia and marketed them in Nagasaki and Korea, and this business with Japan soon increased considerably. In 1926, owing to political reasons, Chinese products began to disappear from the Japan market but fortunately paper umbrellas from Yungchia and Hangchow found a new and good market in the Straits Settlements, since when umbrella makers in Yungchia have increased to over 100, with 50 in Hangchow, and smaller numbers other places.

The making of oiled-cloth umbrellas in Chekiang started in 1912. They are more durable than the paper variety, and are made mostly in Hangchow, Yungchia and Ninghsien.

The first factory to make foreign-style umbrellas was the Hsin Min New Factory (新民新廠), establish in Hangchow in 1924, those starting subsequently being the Hsin Ya (新亞), Yung Lung (永隆), Fang Jui Hsing (方瑞盛), Fang Shun Hsing (方順興), Hua Feng (華峯), and Fu Sheng Hsiang (福生祥). From the point of view of turnover, foreign-style and oiled-cloth umbrellas are not so popular as the paper variety.

There are about 200 umbrella-makers now operating in Chekiang, distributed as follows: Yungchia, 107; Hangchow, 35; Ninghsien, 13; with a few at Lanch'i, Lungyu, Ch'ühsien, Juian, P'ingyang, Lots'ing, Yühuan, Chuch'i, Hsinteng, Ch'anghsing and Fuyang. In Yungchia the largest firm in the business has a capital of $5,000, while in Hangchow, Ninghsien, and Chinhua capital invested in each concern varies from $3,000 to $4,000. In Hangchow there are five makers of foreign-style umbrellas, working on a capital ranging between $500 to $3,000.

Operatives employed in umbrella-making shops are divided into "long" and "short", laborers. Work on the ribs, paper-pasting, oiling, and painting are done by "long" labor, while the other process, such as making umbrella-heads and handles, are carried out by workers of "short" labor. Wages for "long" labour are paid monthly, varying according to the skill and experience of the individual. In Yungchia the pay of a "long" worker varies from $6 to $13 a month, decorators receiving a little more than an ordinary worker. All operatives in the umbrella industry are provided with free lodging and board, and are entitled to receive half their expected salary upon starting to work the balance being paid on the expiration of one month. In Hangchow the operatives are sometimes paid by piece-rate, wages being paid at the end of each month. Workers in Yungchia are recruited locally, while in Hangchow most of the operatives are recruited from Hsiaoshan. In foreign-style umbrella factories wages are paid either on a monthly basis or by piece-rate, the former ranging from $1.50 to $10. Workers in foreign-style umbrella shops are recruited from Shaohsing and Tungyang.

PAPER UMBRELLA MAKERS IN YUNGCHIA

Makers		Capital	Workers	Annual Turnover
Teng Chin Tsun	(滕錦春)	$500	5	$3,000
Teng Chang Tsun	(滕長春)	500	5	1,000
Yeh T'ien Yuan	(葉天元)	500	5	1,913
Shih Yuan Shun	(施源順)	500	5	3,000
Shih Ch'ang Hsing	(施長興)	300	3	1,500
Shih Heng Tsun	(施恒春)	500	5	3,000

Makers		Capital	Workers	Annual Turnover
Shih Chen Feng	(施振豐)	$500	5	$3,000
Hu Shun Fa	(胡順發)	300	3	1,500
Hsin Shun Fa	(新順發)	400	3	1,500
Chin Shun Fa	(金順發)	500	5	2,500
Hsin T'ung Fa Yao Chi	(新同發姚記)	500	5	2,000
Hu Yung Fa Ta Fang	(胡永發大房)	200	2	1,000
Lin Chien Fa	(劉乾發)	200	2	1,000
Lin Tsun Ho	(林椿和)	300	3	1,500
Yuan Teh Li	(阮得利)	500	5	5,000
Cheng Teh Shun Er Fang	(鄭德順二房)	300	3	1,500
Cheng Teh Shun Ta Fang	(鄭德順大房)	500	5	3,000
Chen Chü Fa	(陳聚發)	500	5	3,000
Liu Yung Fa	(劉永大)	500	5	2,000
Yang Tsun Tung	(楊春東)	500	5	2,000
Chen Yung Li	(陳永利)	500	5	4,000
Chen Teh Fa	(陳德發)	300	5	2,000
Pan Jui Chin	(潘瑞錦)	1,000	14	20,675
Li Hung Fa	(李洪發)	2,000	16	23,800
Sun Hsin I	(孫信義)	200	2	1,000
Huang Yung Hsing	(黃永興)	200	2	1,000
Kao Shun Chi	(高順記)	5,000	6	4,500
Chen Ho Li Er Fang	(陳合利二房)	2,000	8	20,000
Pan Yuan Hsing	(潘源興)	1,000	7	4,000
Hu Teh Sheng	(胡德盛)	200	2	3,000
Lin Yuan Mao	(林源茂)	200	21	1,000
Chen Tsun Cheng	(陳春成)	1,000	6	13,000
Hsü Tung Hsing	(許東興)	500	4	4,240
Hsia Ta Shun Ta Fang	(夏大順大房)	500	5	5,000
Hsia Ta Shun San Fang	(夏大順三房)	500	3	4,000
Shih I Sheng	(施益盛)	500	4	1,000
Sun Chü Shun	(孫聚順)	200	2	1,000
Chin Shun Fa	(金順發)	500	4	2,160
Ma Cheng Chi	(馬誠記)	2,000	25	70,000
Liu Chien Fa	(劉乾發)	200	2	1,200
Hsieh Chin Fa	(謝進發)	200	2	1,000
Lin Hsieh Yuan	(林協源)	200	2	1,000
Lin Yü Hsing	(林裕興)	200	2	1,000
Hsin Yung Sheng	(新永盛)	500	4	4,000
Hsieh I Ho	(謝益和)	300	3	1,500
Lu Ta Yuan	(魯大源)	300	3	1,500
Lin Shun Fa	(劉順發)	300	3	1,500
Lin Sheng Chang	(林生昌)	5,000	35	199,600
Tung Yuan Shun	(同源順)	1,200	3	1,500
Chao Shun Li	(趙順利)	500	5	2,500
Chin Yuan Hsing	(金源興)	200	2	1,000
T'sai Yung Fa	(蔡永發)	500	5	2,500
Chien Shun Li	(陳順利)	300	4	1,500
Liu Hung Yuan	(劉洪源)	300	3	1,500

Makers		Capital	Workers	Annual Turnover
Peng Yung Feng	(彭永豐)	$300	3	$1,500
Ch'en Ho Li	(陳合利)	500	4	2,000
Chao Shun Li	(趙順利)	200	2	1,000
Lin Yuan Hsing	(林源興)	500	5	2,000
Hsin Shun Fa	(新順發)	500	5	2,000
Wu Shun Fa	(吳順發)	500	5	3,000
[illegible] Chü Fa	(林聚發)	200	2	1,000
Lin Yen Yuan	(林延元)	200	2	1,000
Wu Tsun Ta	(吳存大)	500	5	3,000
Hsieh Tsun Fa	(謝存發)	500	4	4,000
Shen Shun Fa	(森順發)	500	5	2,000
Cheng Shou Chi	(鄭壽記)	500	5	7,639
Hsü Chung Hsing	(徐忠興)	500	4	2,500
Hsu Yuan Sheng	(徐源盛)	500	4	2,000
Wang Ho Fa	(王合發)	500	5	2,000
Chen Pao Fa	(陳寶發)	500	5	2,000
Hsin Yung Sheng	(新永盛)	500	4	4,000
Hsia Jih Fu Hsing Chi	(夏日復星記)	2,000	15	59,000
Wen Teh Li	(溫得利)	200	2	3,000
Hu Yung Fa	(胡永發)	200	3	1,000
Kung Chin Sheng	(孔進昇)	200	3	1,200
Shih Shun Fa Jen Chi	(施順發仁記)	200	2	1,200
Shih Yung Shun	(施永順)	500	5	4,000
Shih Shun Fa	(施順發)	2,000	26	110,800
Shih Yuan Fa Er Fang	(施源發二房)	200	3	1,000
Shih Yuan Fa Ta Fang	(施源發大房)	300	3	1,500
Shih Tsun Sheng	(施存生)	500	5	4,524
Chou Pao Yuan	(周寶源)	500	4	2,500
Fan Yuan Ta	(范源達)	500	5	2,500
Cheng Shun Li	(鄭順利)	500	15	9,000
Ho Chien Tai	(何乾泰)	300	4	1,600
Wang Chin Fa	(王進發)	300	4	1,600
Teng Tung Tsun	(滕同春)	300	3	1,500
Chen Yuan Ho	(陳源和)	300	4	1,500
Chu Shou Chi	(朱壽記)	1,000	7	19,000
Li Chen Hsing	(李振興)	200	2	1,200
Ting Yung Chi	(丁永記)	200	2	1,000
Shih Heng Chang	(施恆昌)	200	2	1,000
Shih Pei Chang	(施培昌)	200	2	1,000
Lin Jui Fa	(林瑞發)	200	2	1,000
Hsin Ho Shun	(新合順)	300	2	1,500
Lin Yung Fa	(林永發)	300	2	2,000
Hsin Yu Tsun	(新裕存)	300	2	1,500
Hu Yuan Fa	(吳源發)	200	2	1,000
Chin Shun Fa Er Fang	(金順發二房)	300	3	1,000
Cheng Yung Fa	(鄭永發)	300	3	2,160
Kung Mao	(公茂)	1,000	25	38,000
Ni Yung Tai	(倪永泰)	300	3	2,000

Makers		Capital	Workers	Annual Turnover
Li Tai Hsing	(李泰興)	$300	3	$2,000
Tai Yung Chang	(戴永昌)	300	3	2,000
Chin Teh Chang	(金德昌)	300	3	1,000
Liang T'ing Yuan	(梁庭元)	300	2	1,000
Chih Ting Yuan	(池定元)	300	3	2,000
PAPER UMBRELLA MAKERS IN HANGHSIEN				
Hsin Ta Lu	(新大陸)	—	—	$28,000
Ku Chin Tang	(顧錦堂)	—	—	1,000
Hangchow	(杭州傘廠)	—	—	1,500
Ching Sheng T'ang	(慶生堂)	—	—	2,000
Min Sheng	(民生)	—	—	3,000
Tung Ching Yung Wen Chi	(同慶永文記)	—	—	1,000
Yang Ching Shan Sheng Chi	(楊慶山生記)	—	—	1,000
Lo Wen Shun	(羅文順)	—	—	1,000
Lo Wen Shun	(羅文順)	—	—	1,000
Sun Yuan Hsing	(孫元興)	—	—	6,000
Chung Kuo	(中國傘廠)	—	—	1,000
Wang Yung Chang	(王永昌)	—	—	1,000
Chu Shun Hsing	(朱順興)	—	—	1,000
Chen Hsiang Shun	(陳祥順)	—	—	4,000
Hu Chen Hsing	(胡振興)	—	—	1,500
Chin Heng Ho	(金恆和)	—	—	3,000
Chen Hsiang Shun	(陳祥順)	—	—	1,500
Tung Ching Tang	(同慶堂)	—	—	2,000
Chin Chiu Ho	(金久和)		—	1,500
Hsu Yung Chi	(徐永記)	—	—	1,300
Hsu Shun Hsing	(老順興)	—	—	1,000
Chin Chin Ho	(金久和)	—	—	2,500
Hsu Shen Hsing	(徐順興)	—	—	1,500
Chin Chiu Ho	(金久和)	—	—	2,000
Huang Hsin Chi	(黃信記)	—	—	1,000
Chin Heng Ho	(金恆和)	—	—	2,000
Huang Hsin Ho	(黃信和)	—	—	4,000
Tung Wen Yuan	(董文遠)	—	—	3,500
Tung Chiu Fang	(董久房)	—	—	5,000
Lao Wen Yuan Ching Chi	(老文源慶記)			3,000
Wen Tung Yuan	(文董源正記)	—	—	2,000
Ku Chin Tang	(顧錦堂)	—	—	3,000
Yu Wen Tai	(于文泰)	—	—	3,000
PAPER UMBRELLA MAKERS IN NINGHSIEN				
Shun Chang	(順昌)	—	—	$8,000
Hsiang Mao	(祥茂)	—	—	2,000
Shen Tai Lung Chi	(愼泰隆記)	—	—	700
Yuan Sheng	(源生)	—	—	2,000

Makers		Capital	Workers	Annual Turnover
Yang Yung Chang	(楊永昌)	—	—	$2,000
Chen Yuan Shun	(陳源順)	—	—	8,000
Ying Yu Pei	(應玉佩)	—	—	3,000
Jui Tai	(瑞泰)	—	—	1,200
Ching Ho	(慶和)	—	—	1,800
Lao Wu Pei	(老五佩)	—	—	2,000
Cheng Ta	(正大)	—	—	1,500
Tai Ho	(泰和)	—	—	1,800
Hsieh Yu Shun	(謝裕順)	—	—	1,000
PAPER UMBRELLA MAKERS IN LANCH'I				
Chu Chien Chi	(朱錢記)	500	—	$ 5,000
Fu Yuan Sheng	(符源盛)	—	—	1,000
Hsieh Ho	(協和)	300	—	1,000
Chin Yu Yuan	(金榆源)	400	—	1,000
Hsu Hung Mao	(許鴻懋)	800	—	2,000
Chou Heng Hsing	(周恒興)	200	—	1,000
Wu Kuang Ta	(吳廣大)	100	—	1,500
PAPER UMBRELLA MAKERS IN CHINHUA				
Mao Hsing	(茂興)	100	4	$ 500
Tseng Yu Hsing	(曾餘興)	100	6	1,000
Tung Ho Hao	(同和號)	1,000	14	2,000
Chou Mao Shen	(周茂森)	100	7	1,200
Li Chien Yuan	(李乾源)	500	9	4,000
Chen Wan Hsing	(陳万興)	400	—	900
Lang Chen Hsing	(蔺振興)	200	—	500
Chu Yung Chang	(朱永昌)	800	—	1,200
Wang Chu Hsing	(王聚興)	700	—	1,400
Wang Tung Shun	(王同順)	500	—	1,000
Huang Shun Tai	(黃順泰)	300	—	900
Chen Mao Sheng	(陳茂生)	500	—	1,200
Yen Shun Chang	(嚴順昌)	500	—	1,200
Pan Yung Hsing	(潘永興)	500	—	1,300
Chang Tung Hsing	(章同興)	400	—	1,000
PAPER UMBRELLA MAKERS IN LUNGYU				
Li Hsieh Ho	(李協和)	200	—	$700
PAPER UMBRELLA MAKERS IN CHURHSIEN				
Chang Tung Tai	(張同泰)	700	—	$1,500
PAPER UMBRELLA SMAKERS IN JUIAN				
Tai Chin Fa	(戴進發)	500	—	$1,500
Hong Shun Fa	(項順發)	700	—	2,100
Hsueh Ho Shun	(薛合順)	500	—	1,500

Makers		Capital	Workers	Annual Turnover
Yu Yung Shun	(余永順)	$500	—	$1,500
Lai Teh Shun	(賴德順)	500	—	1,500
Feng Tsu Shen	(方滋生)	600	—	1,800
Hsu Cheng Fa	(徐正發)	500	—	500
Shih Yung Sheng	(施永盛)	500	—	500
PAPER UMBRELLA MAKERS IN P'INGYANG				
Wang Yung Shun	(王永順)	$500	—	$1,000
Wang Wan Sheng	(王萬盛)	500	—	1,000
Chang Tsun Sheng	(張春盛)	500	—	1,000
Chang Tsun Sheng Er Fang	(張春盛二房)	500	—	1,500
Hu Lung Sheng	(胡隆盛)	500	—	3,000
Li Yuan Sheng	(李源盛)	600	—	3,000
Wu I Sheng	(吳義盛)	500	—	2,000
Li Tsun Ho	(李春和)	500	—	2,500
Hsu Chin Shun	(許金順)	400	—	1,500
Huang Chuan Li	(黃全利)	400	—	1,500
Hung Teh Sheng	(洪得盛)	300	—	1,000
PAPER UMBRELLA MAKERS IN LOTS'ING				
Chin Chiu Feng	(金久豐)	$400	—	$1,200
PAPER UMBRELLA MAKERS IN YUHUAN				
Chang Yuan Feng	(張源豐)	$300	—	$1,000
Ko Ho Hsing	(柯合興)	300	—	1,200
Pan Teh Fa	(潘德發)	200	—	1,800
PAPER UMBRELLA MAKERS IN CHUCH'I				
Yung Ching Tang	(永慶堂)	$600	8	$4,500
PAPER UMBRELLA MAKERS IN HSINTENG				
Hung Yuan	(鴻源)	$300	—	$1,400
Yuan Ta	(源大)	300	—	1,200
PAPER UMBRELLA MAKERS IN CH'ANGHSING				
Hua Fu Sheng	(華復盛)	$150	2	$380
Lü I Ho	(呂義和)	200	3	560
Hsu I Ho	(徐義和)	150	3	400
PAPER UMBRELLA MAKERS IN FUYANG				
Kuang Yuan Cheng	(廣源城)	$800	4	$1,000
Chen Yung Mao	(陳永茂)	900	5	1,200
Chen Yung Sheng	(陳永盛)	700	5	1,000

FOREIGN-STYH UMBRELLA MAKERS IN HANGCHOW

Makers		Workers.	Capital.
Hsin Ya	(新亞)	31	$3,000
Yung Lung	(永隆)	5	1,000
Fang Jui Hsing	(方瑞興)	2	500
Fang Shun Hsing	(方順興)	3	600
Hua Feng	(華峯)	3	600
TOTAL		44	5,700

SUPPLIES OF MATERIALS

The material used in making paper-umbrellas consists of paper, tung-oil, persimmon lacquer, starch, cord, bamboo, and wood; other incidentals include copper bolts, dyes, and leather. The varieties of papers used are either *t'ao hua chih* (桃花紙), *shang p'i chih* (桑皮紙) or *ching pien chih* (京邊紙). The *t'ao hua chih*, or "peach blossom" paper, is thin and fine in quality and white in colour, and is manufactured from the bark of certain trees. This paper is produced in Wuyuan (婺源), Anhui province, while in Chekiang the chief centres of production are Yüch'ien and Hsinteng, the price varying from $0.80 to $1.03 per 300 sheets. The *shang p'i chih*, or "mulberry bark" paper, is produced in Yühang, Yüch'ien, and Chingning the latter product being the best. This paper is largely used in Yungchia, prices varying from 60 to 80 cents per 300 sheets. The *ching pien chih* is produced in Fuyang and Shuichang, prices varying from $7 to $8 a *chien* (件). Umbrellas made of *t'ao hua chih* and *shang p'i chih* are more durable than those made of *ching pien chih*.

The oil used in umbrella-making includes *tung* oil and *tsing* oil (清油), the best quality being produced in Szechuan. Tung oil is also produced in Chekiang but the quality is not so good as the Szechuan product. Tung oil is too thick and *tsing* oil is too thin when used alone, and a mixture of the two is used in coating the paper web to make it waterproof and also improve its appearance.

Persimmon lacquer is a thick liquid, reddish-brown in color, made from non-edible persimmons and used to paste the paper web on the ribs. Umbrellas intended for use in

rainy weather are pasted with persimmon lacquer instead of starch. This lacquer is a product of Fukien, Kiangsi, and Szechuan and is sold at from $5 to $6 a catty, the Szechuan product being the best.

Cotton-yarn cord and human hair are used to fasten the strut ends, the former being employed in making modern style umbrellas, while the latter is used for making the old-fashioned types. Cotton-yarn cord is obtained from Shanghai, and supplies of hair are obtained locally.

Bamboo for making ribs and struts is obtained from Fuyang and Yühang, near Hangchow, the price being $1 per 100 catties, while for the handle-rods *shih chu* (石 竹) or "stone" bamboo and *shui chu* (水 竹) or "water bamboo are used. The woods used in making the tips and handles of unbrellas are chestnut and jujubee, but for the better grades horn is used. Jujubee and chestnut are obtainable locally, while horn is imported from Shanghai.

For making oiled cloth umbellas white cotton cloth is used. In Hangchow the cloth used is the San Hsing (三 星) brand, priced at $11 a bolt, from which 23 umbrella webs can be made. The cloth used for making foreign-style umbrellas is black, and consists of venetians and Beatrice twills. British-made Venetians are the best in quality, but in 1929 and 1930 Japanese goods became very popular among Chinese umbrella makers but with the appearance of Venetians turned out by the Ta Feng Factory (達豐廠), Shanghai the popularity of Japanese goods has declined considerably. The Chinese product is classified in four qualities, prices ranging from 10 to 16 cents a yard.

Ribs for making umbellas are either of *ho hua* (荷花) or "lotus flower" kind or the *tsao ku* (槽 骨) variety with five kinds of handles—artificial ivory, iron, rattan, brass, and wood, while the sticks are made of ratten, iron, and wood.

The annual consumption of materials for making umbrellas at various manufacturing centres is shown in the following list:—

Yungchia	$319,800
Hangchow	40,600
Ninghsien	14,000
Lanch'i	5,000
Chinhua	7,720
P'ukiang	8,000
Lungyu	280
T'unglu	800
Ch'ühsien	600
Shuian	4,360
P'ingyang	7,600
Lots'ing	480
Yühuan	1,600
Chuch'i	1,800
Hsinteng	1,040
Ch'anghsing	536
Fuyang	1,200

The process of making umbrellas or kittysols is divided into seven stages—handle-making, rib-sorting, web pasting, web folding, coloring, oiling, and decorating. In the umbrella trade the principle of division of labor is well established. Handle rods are made by one class of workers, ribs and struts are cut and partially finished at the places where the raw material (bamboo) is produced, and the decorative figures on the webs are provided by local printers.

The centre sticks are made from wood boards which are first sawn into sticks about two feet long and one inch square, then trimmed and rounded, smoothed, and given a coating of lacquer to improve their appearance. (In addition to supplies from Anhui the lacquer turned out by the Chen Hua Oil Paint Manufacturing Company (振華油漆公司) of Shanghai is sometimes used.) After lacquering decorative figures are either carved of painted on the lower end of the stick that forms the handle, at this end a hole is bored through which a cord is strung. Both sides of this hole are ferruled or protected with shoe-eyelets so that the stands wear better. A groove is cut some inches from the farther end, and an iron spring catch inserted therein, theis completing the work of making wooden handles. In

making rods of bamboo, the stick selected must be straight and smooth, and taper very gradually toward the end. The pole is then cut into sticks about two feet long, and any protuberance at the nodes or joints is removed and and the stick smoothed in such way as to enable the sliding ring to move freely up and down. The sticks are then straightened by heating and fashioning and a groove similar to that at the top of the stick is cut for the catch near the handle.

Reaching the umbrella-makers in an almost finished state, the ribs and struts are sorted and examined, as consignments sometime include pieces below standard quality or otherwise defective. The ribs are at first made of the same length, and must be further cut to suit the making of umbrellas of different sizes. In making kittysols all the ribs are not of uniform length, as between every two long ribs there are two short ones, the idea being to reduce weight. Each umbrella or kittysol requires 36 ribs. After assembling the ribs and struts, the former are strung with cotton cord for kittysols and with cord made of human hair for umbrellas. The cotton cord is either waxed or made of ordinary cotton or mercerised yarn. Waxed yarn is the strongest; mercerised cotton yarn is less strong, while common cotton yarn is he most fragile.

When the ribs and struts are joined together and strung with cord, an improvised stick or handle rod is used to support the struts during the operation of web-pasting. The rim of the web is first pasted with long slips of paper about three inches wide, and the partially pasted web is then spread out to dry. The paper used for making kittysols is generally colored, and printed with such decorative figures or flowers, or frequently a picture of the West Lake. The paper for the middle part of the web is cut in cylindrical form and pasted on to the ribs after the rim is dried. The top of the web forms the third part, and is pasted last. Starch paste is used in making kittysols, which are designed for use as sunshades, and starch is good enough for the purpose and much cheaper than persimmon lacquer. In making oiled-paper umbrellas the use of persimmon lacquer is necessary, as it does not dissolve in

water. The cord used to fasten the ribs of umbrellas is made of human hair also because of its water-resisting quality. After the web is completely pasted, it is carefully folded. This part of the work is also highly important, because if carelessly folded, the webs easily crack and go out of shape. Folding is done with the aid of a piece of brass, not unlike a shoe-horn, and to make the creases permanent, the web is kept folded for some time by having a rattan ring slipped over it. In making a kittysol, no colouring is needed after folding, because coloured figures have been already printed on the web, but umbrellas pasted with plain paper are often tinted brown or reddish-brown with aniline dyes, with the ribs painted with white or green lacquer.

Compared with the old-style paper umbrellas, the new kind shows many improvements. Handles were formerly made of stout bamboo sticks, the ribs were clumsy and heavy, and the web was unnecessarily large and thick, with the result that each umbrella weighed over two catties. The new type is made far lighter, the weight being reduced by half or even more. Handles are now well finished, and the web, instead of the monotonous dark brown color, is tastefully decorated. Kittysols are much more fancifully made now than they used to be. The handle is sometimes inlaid with ivory, glass beads, or even a toy compass, while the web is decorated with pictorial designs. Dealers in kittysols can tell by the style of decoration the different makes on the market. The make in Hangchow can be distinguished by their views of West Lake, while those from Wenchow are always decorated with figures of birds and flowers. The following table shows the value of the annual production of paper umbrellas in various districts of Chekinag:

Yungchia	$779,511
Hanghsien	101,600
Ninghsien	35,000
Lanch'i	12,500
Chinhua	19,300
Lungyu	700
Ch'ühsien	1,500
Shuian	10,900

P'ingyang	$19,000
Lots'ing	1,200
Yühuan	4,000
Chuch'i	4,500
Hsinteng	2,600
Ch'anghsing	1,340
Fuyang	3,200
T'unglu	2,000
P'ukiang	21,600

The total annual production of paper umbrellas in the 17 districts mentioned above was about $1,000,000 in value, of which Yungchia's share represented 76 per cent of the total. There are five umbrella makers now operating in Hangchow, making annually about 53,000 umbrellas valued at over $68,300. The following table shows the annual turnover of umbrella factories in Hangchow:

Hsin Ya (新亞)	$50,000
Yung Lung (永隆)	7,200
Fang Jui Hsing (方瑞興)	3,200
Fang Shun Hsing (方順興)	3,400
Hua Feng (華豐)	4,500

The umbrellas made in Yungchia have a wide market, including Shanghai, Ningpo, Soochow, Nanking, Canton, Newchwang, Tientsin, and Yingkow, and are also exported to Japan, Straits Settlements, Europe, and the United States. In 1926, since the boycott of Chinese umbrellas by the Japanese, the export to Japan has decreased considerably, while trade remains fairly steady with the Straits Settlements, United States, and Europe.

Hangchow umbrellas are exported mainly to Shanghai, Soochow, Wusih, with limited supplies going to the Straits Settlements. Most of the umbrellas produced in Ninghsien are absorbed locally, with a small number sent to Shanghai, while the Chinhua product is marketed in Lanch'i, Linpu (臨浦), and Shaohsing. The output of Ch'anghsing is distributed in Wuhsing, while for Hangchow the chief market is the Chientang Valley.

Umbrellas for export are packed in wooden cases of 120, and are exempt from taxes. Agents in Wenchow

(Yungchia) doing export business are classified into Tienstin, Newchwang, Yingkow, Kuangtung, and Honan groups, who transact business with the makers either by cash or on credit, in the latter case accounts being settled at the three big festivals.

According to Customs reports, umbrellas exported from Chekiang in 1927 amounted to 2,075,000, but decreased to 1,682,091 in 1928. In 1929 the export increased slightly to 2,455,300 with 2,573,218 in 1930, while in 1931 the trade increased to 3,461,813. The following table shows the relative positions held by Wenchow (Yungchia), Ningpo (Ninghsien), and Hangchow (Hanghsien) in export business during the five years ending 1931:—

	Wenchow (pieces)	Hangchow (pieces)	Ningpo (pieces)	Total (pieces)
1927	2,007,097	510	68,280	2,075,887
1928	2,007,097	669	15,400	1,682,091
1929	2,428,304	200	26,800	2,455,304
1930	2,553,941	2,742	16,600	2,573,283
1931	3,437,433	4,208	20,100	3,461,743

CHAPTER XXXI

ICE-STORES AND FACTORIES

THE ICE industry in Chekiang is divided into two sections, natural ice storage, and artificial ice-making. The ice stores are centered at Ninghsien, where in the suburban district of Ping Ch'ang Ken (冰廠跟) nearly 20 of there establishments are situated. The method of storage is very simple, consisting of nothing more than a pit about 10 feet deep and 20 feet in diameter. Natural ice is cut into blocks and stored in this pit which when full is covered with thick layers of straw, reeds, and mud. The capital of these concerns is very small, ranging from $300 to $1,000. Regular workers receive $9 a month for packing blocks in the pit, while temporary workers engaged to carry ice from ponds or rivers to the pit are paid at the rate of $0.03 per picul. Regular workers are engaged for three months, while temporary hands work on a monthly basis.

The following are the names and capital of the leading ice stores in Ninghsien and Hangchow:—

		Location		Capital
Chung Mao Chi	(宗茂記)	Ninghsien	.....	$ 300
Pao Chi	(葆　記)	„	.....	300
Ch'u Chi	(楚　記)	„	.....	300
Mo Chi	(謨　記)	„	.....	300
Hsiu Chi	(秀　記)	„	.....	400
Yun Chi	(運　記)	„	.....	300
Jung Chi	(榮　記)	„	.....	300
Lan Chi	(蘭　記)	„	.....	400
Shun Chi	(舜　記)	„	.....	300
Mei Hao	(梅　號)	„	.....	300
Nan Hao	(南　號)	„	.....	400
Fu Chi	(傅　記)	„	.....	300
Sheng I Chi	(盛一記)	„	.....	300
Fu Ts'ai Chi	(甫采記)	„	.....	400
Sheng Chi	(生　記)	„	.....	300
Kui Chi	(桂　記)	„	.....	400
Mao Chi	(茂　記)	„	.....	300
Hsin Chi	(信　記)	„	.....	300
Teh Chi	(德　記)	„	.....	400

		Location	Capital
Liang Hao	(良 號)	Ninghsien	$ 300
June Yuan	(潤 源)	Hangchow	1,500
Hsin Chi	(新 記)	„	1,200
Ho Chi	(和 記)	„	1,600
Li Sheng	(麗 生)	„	1,000

There are two ice-factories operating in the Province, the Hsi Ling Factory (西泠冰廠), Hangchow, and the Ching Kuang Factory (晶光冰廠), Yungchia. The former was established in 1928, and the latter in 1930. The Hangchow factory is equipped with an oil-engine of 32 h.p., while the Yungchia factory has engines generating 49 h.p. Both factories are capitalized at $30,000, and have a staff of about 10 workers.

No figures relating to the total amount of natural ice stored are available but a rough estimate of the amount stored in Hangchow and Ningpo is 4,000-5,000 piculs a year. The annual output of artificial ice, from the Hangchow plant is 450,000 lbs., and of the Yungchia plant, 1,700,000 lbs., selling in Hangchow at 90 cents per 100 lbs., and in Yungchia at 70 cents.

The principal consumers of natural ice are fishing companies, which retail supplies to fishing-boats to keep their catch fresh. Artificial ice is supplied almost exclusively to restaurants, hospitals, dispensaries, railways and steamers, though in some cases natural ice is also used.

In addition to making ice, the factories at Hangchow and Yungchia also rent ice-boxes to the public. A box capable of holding 100 lbs. of ice may be hired for $8 a year, and a small box, with a capacity of 20 lbs., for $3.

CHAPTER XXXII

STONE POWDER

PRIOR to 1926 five factories were engaged in making stone powder of various grades in Chekiang, but owing to keen competition from Shanghai only the Yung Li Feng plant (永利豐) is now in operation, the remainder being forced to close down. In 1931 a concern known as the Lu Ho Stone Powder Company (六和石粉公司), was established, but its output is used exclusively for the glass industry.

The Yung Li Feng plant was established in 1912 with a capital of $500. Only six operatives are employed, and over 3,000 piculs of stone powder are produced annually, valued at about $4,000. The Lu Ho plant, equipped with one 10 h.p. motor and three grinding-machines, is capitalized at $13,000. The total number of workers employed is 25, turning out 3,600 tons of powder annually, with a turnover of about $60,000.

Four kinds of stone are used by the Lu Ho plant, *chi shan* stone (吉山石), *chi sheng* stone (集盛石), calcite, and fluorite. The first two are the most extensively used, and both are obtained locally. Fluorite is found at Ch'enghsien and Lanch'i, and calcite at Ch'enghsien, the consumption of these being only about 10 per cent of the total. The raw material used by the Yung Li Feng plant is a kind of soapstone, obtained from Ch'anghsing and Chinkiang, Kiangsu Province. The cost per ton is from $2.50 to $4, plus $3 for freight from Chinkiang, and $1.20 from Changhsing.

Most of the powder produced by the Lu Ho plant is sold to glassworks in Shanghai at $17 per ton. The product of Yung Li Feng is of two kinds, *hsi fen* (細粉) or "fine" powder, and *ch'u fen* (粗粉) or "coarse" powder.

"Fine" powder known as *t'ou p'iao fen* (頭漂粉) is sold to local face-powder makers at $2 per picul, the annual consumption being about 1,500 piculs. "Coarse" powder, known as *er p'iao fen* (二漂粉) is sold to rice-mills and painters at 80 cents per picul, the annual consumption being 1,700 piculs.

CHAPTER XXXIII

LIME-BURNING

FIVE *hsien* districts are regarded as the chief lime-producing centers in Chēkiang; in order of importance they are Lots'ing, Ch'anghsing, Hanghsien, Hsinteng, and T'unglu. Being on the sea-coast, Lots'ing has an abundance of shells suitable for making lime, and owing to the low cost of production the industry is very prosperous. The total number of kilns in operation is 60, and the annual production amounts to 720,000 piculs. Six kilns are operating in Ch'anghsing, where the chief material used is limestone. A large kiln is capable of producing over 50,000 piculs a year, while a small one turns out 20,000 piculs. The manufacturing of lime in Hanghsien was started in 1922, when the Ch'ien Ta Hsing factory (錢大興灰廠) was established. In 1927, owing to increasing demand, a branch was opened at Hsu Kung Hsiang (徐宮巷), in the Huhsü district (湖墅) of the city. In 1929 the Chieh Ch'eng factory (捷成灰廠) came into existence, and with two kilns the annual capacity is 56,000 piculs. The kilns in Hsinteng are operated only when there is a demand, the total production being roughly put at 85,000 piculs a year. Like those at Hsinteng, the kilns at T'unglu have no regular period of operation and about 70,000 piculs of lime are produced annually. Detailed figures for each *hsien* are as follows:—

	Annual Production (Piculs)	Price per Picul	Total Value
Lots'ing	720,000	$0.20	$144,000
Ch'anghsing	220,000	0.50	110,000
Hanghsien	98,500	0.80	77,000
Hsinteng	85,000	0.50	42,500
T'unglu	70,000	0.40	28,000
Total	1,193,500		$401,500

Limestone is bought at 70 cents per ton. The period of each burning is about 15 days, and from 180 catties of limestone 100 catties of lime are produced, of which 75 per cent is lump lime, and the remainder dust. Shells are collected on the seashore, and are used by nearby kilns only.

Lime produced by the Hanghsien kilns is used only for local consumption, while that produced in Changhsing is mostly shipped to Shanghai. T'unglu lime is sold through the Hsin T'ung Lime Company (新桐灰公司) in Ninghsien, Shaohsing and Hsiaoshan, the commission charged being $3 per 100 catties. Fuyang and Yüyao are the chief consuming centers for Hsinteng lime.

CHAPTER XXXIV

FLASHLIGHT CELLS

THE MAKING of dry cells for flashlights is a new enterprise in Chekiang, and is on a very limited scale, only nine factories being in operation, with an aggregate capital of $10,450. Particulars are as follows:—

	Location	Estab-lished	Organiza-tion	Capital	Work-ers	Out-put. (doz)
Tung Nan (東南電池廠)	Hangchow	1930	Sole ownership	$800	3	——
Mei Ch'ang (美昌電池廠)	〃	1921	〃 〃	700	3	——
Chung Shan (中山電池廠)	Ninghsien	1928	Partnership	1,000	18	40,000
Kung Yeh (工業電池廠)	〃	1927	〃	1,000	16	30,000
Ta Chung Hua (大中華電池廠)	〃	1925	Sole ownership	450	16	30,000
Kuo Kuang (國光電池廠)	Yuyao	1932	〃 〃	1,000	3	10,950
Sheng Li (勝利電池廠)	〃	1926	〃 〃	500	3	8,000
Ta Chung Hua (大中華電池廠)	Yungchia	1925	〃 〃	5,000	5	2,000

The principal materials used comprise tin sheet, manganese powder, carbon, sulphuric acid, sealing-wax, and copper caps. Manganese is produced in Hunan, but all other materials are imported mostly from Germany. Manganese powder costs $120 a ton, zinc powder $13 per 100 lbs., amonium chloride, $27 per 100 lbs., and carbon sticks, $16 per case.

Most of the cells are made for local use, though the products of Yuyao are partly disposed of in Tsuch'i, and 60 per cent of the Yungchia products are sold at Lishui.

CHAPTER XXXV

FIRE-CRACKERS

THOUGH the crackers manufactured in Liuyang (瀏陽), Hunan province, are the most popular, those turned out at Chinhua and Lanchi, in Chekiang Province, are very widely used, and the quality is not inferior to the Liuyang product. During the late dynasty the fire-cracker business was very prosperous, but recently has declined, although the use of fire-crackers is still common at festivals, religious observances, weddings, birthday celebrations, and on similar festive occasions.

There are 27 cracker dealers in Chekiang, including 4 in Chinhua, 17 in Lanchi, and 6 in Lishui, their capital ranging from $1,200 to $50. Businesses capitalized between $50 to $300 number 15; between $300 and $500 there are 3; between $500 and $1,000 there are 8, with one over $1,000. The aggregate capital of these concerns amounts to $9,120, apportioned as follows:—

		Capital	Location
Wang Heng Tsun	(汪恆春)	$500	Chinhua
Chou Heng Ta	(周恆大)	600	"
Heng Tai Fa	(恆泰發)	800	"
Yung Hsing	(永興)	100	"
Cheng Fu Hsing	([illegible]興)	80	Lanchi
Huang Shun Hsing	(王順興)	100	"
Fa Tung Shun	(范同順)	120	"
Wang Teh Shun	(汪德盛)	400	"
Liu I Shun	(劉益順)	100	"
Hu Yuan Lung	(胡源隆)	200	"
Fang Jen Tai	(方仁泰)	200	"
Wang I Tai	(汪義泰)	600	"
Yung Sheng Tai	(永盛泰)	520	"
Chan Yuan Sheng	(詹源生)	1,200	"
Yao Shun Lung	(姚順隆)	50	"
Ting Mao Chi	(丁茂記)	200	"
Tung Ta Chang	(通達昌)	200	"
Jen Tai	(仁泰)	650	"
Cheng Fa	(正發)	200	"
Sun I Shen	(孫義森)	500	"

		Capital	Location
Kuang Ho	(廣 和)	$500	Lanchi
Wang Yuan Chang	(王源昌)	200	Lishui
Chu Yung Ho	(朱永和)	250	"
Chu Yung Jui	(朱永瑞)	300	"
Chou Chang Chi	(周昌記)	150	"
Mou Shen	(茂 森)	300	"
Wang Chen Chang	(王振昌)	100	"

The materials used for making crackers consists of paper, saltpetre, sulphur, and charcoal. The paper used in covering the squib is of two kinds, common and *nen liao* (嫩 料), the former being made from the pulp of full-grown bamboo, while the latter is made from the pulp of young bamboos which have not yet developed shoots. Paper made from pulp of the latter variety is stiff and very suitable for making squibs, and costs about $8 per 100 catties. Saltpetre and sulphur are obtained from local deposits, worked by primitive methods, the price of the former being $60 and of the latter $45 per 100 catties. Charcoal made from fir wood is generally used, ground into powder, sifted through a fine mesh, and dried over a fire. In making one catty of gunpowder the proportions used are:—10 ounces of saltpetre, 5 ounces of charcoal dust, and one ounce of sulphur. Squibs made of such a mixture can be used at all seasons and under any climatic conditions.

PRODUCTION

The process of making squibs is divided into 13 stages: paper-cutting, tube-rolling, tube-fastening, wrapping, filling, cutting, pasting, magazine loading, end-sealing, hole-boring, fuse-fitting, and stringing.

Sheets of paper are cut according to the size of the squib to be made, and is rolled into a tube by a simple wooden device worked with a handle, and have a piece of red paper pasted round them. After being dried in sun both ends of the tube are sealed with wet clay, after which the tube is cut through the middle, making two squibs. The open end is covered with yellow paper, through which a hole is made, and serves to prevent the scattering of gunpowder when poured into the squib through a bamboo.

The end of the cracker is then sealed with moistened gypsum, in the same manner as the sealing with clay at the other end, and a hole is made through the gypsum in which a fuse is inserted. To make this fit tightly in the hole the gypsum-sealed end is tapped gently with a stick, and with the aid of a knife the sealing material is packed as close to the fuse as possible. The fuse is further secured by tying up the end of the squib ramie cord, and the finished squib is finally tied into a string of crackers.

The following tables show the cracker dealers now operating in Kinghwa, Lanchi, and Lishui with their annual production (in 1,000) and value:—

CHINHUA

	Production	Value
Wang Heng Tsun (汪恒春)	12,000	$2,500
Chou Heng Ta (周恒大)	20,000	4,000
Heng Tai Fa (恒泰發)	20,000	4,000
Yung Hsing (永興)	5,000	1,000
Total	57,000	$11,500

LANCHI

	Production	Value
Cheng Fu Hsing	5,000	$1,000
Wang Shun Hsing	10,000	2,000
Fan Tung Shun	1,000	200
Wang Teh Sheng	5,500	1,100
Liu I Shun	12,000	2,400
Hu Yuan Lung	29,000	5,800
Fang Jen Tai	22,000	4,400
Wang I Tai	9,000	1,800
Yung Sheng Tai	13,000	2,600
Chan Yuan Sheng	30,750	6,150
Yao Shun Lung	5,500	1,100
Ting Mao Chi	500	100
Tung Ta Chang	1,000	200
Jen Tai	11,500	2,300
Cheng Fa	5,500	1,100
Sun I Shen	10,000	2,000
Kuang Ho	10,000	2,000
Total	176,250	$35,250

LISHUI

	Production	Value
Wang Yuan Chang	12,500	$2,500
Chu Yung Ho	10,000	2,000
Chu Yung Jui	20,000	4,000
Chou Chang Chi	10,000	2,000
Mao Shen	17,500	3,500
Wang Chen Chang	5,000	1,000
Total	75,000	$15,000

Most of the fire-crackers manufactured in Chekiang are disposed of locally, with only a small proportion sold to dealers in neighboring towns, who after having the squibs decorated, branded, and packed, make shipments to various markets.

Fire-crackers are known by many different names. According to the color of the wrapping paper used they are classified into *shuan hung* (全紅) and *pi hung* (皮紅) while according to the quantity of gunpowder used they may be either *shuang liao* (雙料) or *chia liao* (加料). According to the particular manner of making, crackers are divided into *chun chin* (寸金). *ping tou* (平頭) and *niu kou* (牛口). The following table shows the normal standard prices of different varieties:—

	Per 1000.
Shuang liao Chuan Hung Chun Chin ..... (雙料全紅寸金)	$0.30
Shuang liao Chuan Hung Ping Tou ..... (雙料全紅平頭)	0.25
Chia liao Chuan Hung Chun Chin ..... (加料全紅寸金)	0.22
Chia liao Chun Hung Neu Kou ..... (加料全紅牛口)	0.20
Chia liao Chuan Hung Pin Tou ..... (加料全紅平頭)	0.18
Chia liao Hung Pi Chun Chin ..... (加料紅皮寸金)	0.19
Chia liao Hung Pi Niu Kou ..... (加料紅皮牛口)	0.16
Chia liao Hung Pi Ping Tou ..... (加料紅皮平頭)	0.15

	Per cracker
Shuang liao Chuan Hung Ta Pao (雙料全紅大爆)	$0.02
Shuang liao Hung Pi Ta Pao (雙料全皮大爆)	0.016
Chia liao Pi Hung Ta Pao (加料皮紅大爆)	0.008
Chia liao Chuan Hung Ta Pao (加料全紅大爆)	0.01

CHAPTER XXXVI

FURNITURE-MAKING AND WOOD-WORKING

THE WOOD work made in Chekiang is famous for its elaborate design and good workmanship, and business is generally flourishing. The industry was established in Chekiang about 200 years ago, and during its early days was not divided into separate lines, but is now grouped under furniture, basins and bowls, building materials, coffins, sawyers, and ship-repairers.

FURNITURE

Hangchow has four large furniture-making shops, their capital ranging from $3,000 to $6,000, the largest being Mao Heng (茂亨), with an annual output valued at $30,000. There are also 132 shops of smaller size, their aggregate capital amounting to $53,420 and annual production to $358,680 in value. The following table gives the names of furniture-makers in Hangchow and Ningpo together with other particulars:—

FURNITURE-MAKERS IN HANGCHOW

Shops		Workers	Capital	Annual Output.
Mao Heng	(茂亨)	5	$6,000	$30,000
Yü Feng	(裕豐)	10	5,000	26,000
Ch'en Yung Hsing	(陳永興)	15	3,000	10,000
Yang Shun Hsing	(楊順興)	10	5,000	10,000
Other 132 Shops		595	53,420	282,680

FURNITURE-MAKERS IN NINGPO

Shops		Workers	Capital	Annual Output.
Yü Yuan	(徐源)	11	$1,000	$8,000
Shen T'ai Hsing Chi	(恒泰興記)	13	3,000	8,500
Ch'u Yung Ho	(邱永和)	12	2,000	9,000
Lao Fu Shun Feng Chi	(老福順豐記)	22	7,000	35,000

Shops		Workers	Capital	Annual Output.
Shen K'ang	(慎 康)	7	$ 1,000	$ 8,000
Hsiang Chi	(祥 記)	15	6,000	12,000
Tun Ta	(敦 大)	7	1,000	7,000
Shen Ch'ang Ts'un Chi	(森昌春記)	12	3,000	6,000
Hsiang K'ang	(祥 康)	18	6,000	11,000
Yü T'ai	(裕 泰)	12	6,000	11,600
Chi Hsiang	(吉 祥)	20	10,000	40,000
Fu Hao Heng Chi	(福號恒記)	12	7,700	12,000
Yuan K'ang	(源 康)	9	3,000	11,000
Ch'un Shen	(春 森)	10	2,000	11,000
Kung T'ai	(公 泰)	9	2,000	9,000
Sheng Sheng	(生 生)	12	3,000	13,000
Wen Yuan	(文 元)	13	3,000	12,000
Kui Teh Ta	(貴德大)	6	1,000	4,000
T'ung Hsing	(同 興)	4	500	1,200
Wan Sheng	(萬 生)	4	600	1,600
Teh Ta	(德 大)	6	1,000	3,000
T'ai Yuan	(泰 源)	8	2,000	9,000
Hua Hsin	(華 信)	8	2,000	11,000
Ch'ang Sheng T'ai Chi	(長生泰記)	10	4,000	7,000
T'ai Feng	(泰 豐)	12	4,000	7,500
Chang Ch'ua T'ai	(張全泰)	9	1,000	3,000
Shun Hsing	(順 興)	10	1,000	2,500
Yü Hsing	(餘 興)	12	1,000	3,000
Fang K'un Chi	(方坤記)	23	15,000	20,000
Chou Ch'ang T'ai	(周長泰)	20	1,000	9,000
Fu K'ang	(福 康)	12	3,000	5,000
Yuan Shun	(源 順)	5	500	1,000
Li Wan Hsing	(李萬興)	7	1,000	2,500
Ta Ch'eng	(大 成)	8	1,000	3,000
Chiang Hung Hsing	(江鴻興)	5	800	2,000
Mei T'ai	(美 泰)	8	2,000	5,700
Ch'in Hsiang Yuan	(秦祥源)	5	2,000	5,000
Total (37 shops)		396	$111,100	$329,900

BASINS AND BOWLS

There are 60 basin and bowl makers in Hangchow, with capital ranging from $50 to $500. In Hangchow the shops having an annual production of between $600 and $1,000 number 5, between $1,000 and $2,000, 7; and one has an output worth $5,000, while the production from the other 47 shops aggregates about $20,000 in value. In Ningpo the makers of basins and bowls number 44. Shops capitalized between $100 and $300 number 7; between $300

and $500, 16; between $500 and $1,000, 16; between $1,000 and $2,000, 4; and one has an output exceeding $2,000. Shops having an annual production under $500 number 4; between $500 and $1,000, 19; between $1,000 and $3,000, 19; and over $3,000, 1; with one turning out $7,000 work of goods. The operatives employed in these shops number 225 and the total capital amounts to $22,650, while the annual production is $50,000. The following table shows the basin and bowl makers established in Hangchow and Ningpo, together with other particulars:—

BASIN AND BOWL MAKERS IN HANGCHOW

Shops		Capital	Workers	Annual Output.
Yü Teh Hsing	(俞德興)	10	$500	$5,800
Ni Shun Hsing	(倪順興)	3	100	1,600
Chang Fu T'ai	(張福泰)	3	200	1,000
Hsü Shun Hsing	(徐順興)	2	120	1,000
Kuo A Hu	(郭阿虎)	3	100	1,000
Shao Yuan Shun	(邵源順)	2	100	1,000
Wang Yung Mao	(王永茂)	3	100	1,000
Chou Shun Hsing	(周順興)	4	100	1,000
Yen Yung Hsing	(嚴泳興)	2	50	350
Hu Shun Hsing	(胡順興)	2	150	800
Lü Fu Ts'ing	(呂福清)	2	50	800
Wang Ho Hsing	(王合興)	2	80	800
Kuo Jung T'ai	(郭榮泰)	3	200	800
Other 47 dealers		119	4,500	20,530
Total (60 shops)		160	$6,350	$37,980

BASIN AND BOWL MAKERS IN NINGPO

Shops		Capital	Workers	Annual Output.
Ho Yung Hsing	(何永興)	$ 500	6	$1,000
Ts'ui Shun Hsing	(崔順興)	500	8	1,000
Ts'ui Yü Hsing	(崔裕興)	1,000	6	2,500
Yang Jih Hsing	(楊日興)	600	5	1,000
Yang Yuan	(養 元)	1,500	10	2,000
Yü Chuan Hsing	(俞全興)	500	6	1,500
Lu Chen Hsing	(陸鎮興)	300	6	800
Ch'ien Wan Mao	(錢萬茂)	600	3	600
T'ang Yuan Ta	(唐源大)	500	7	1,000
Chang Teh Hsing	(張德興)	200	4	500
Chu Shun Hsing	(周順興)	2,000	9	6,000

Shops		Capital	Workers	Annual Output.
Ts'ao Wan Hsing	(曹萬興)	800	6	2,000
T'ang Teh Hsing	(唐德興)	200	4	800
Chao Teh Li	(趙得利)	400	8	1,000
Lu Ch'ing Chi	(陸慶記)	250	2	500
Hsü Jih Ch'eng	(徐日成)	300	4	500
Lu Wan Shen	(陸萬森)	800	7	1,500
Ch'en Wan Shen	(陳萬森)	300	4	500
Hou Teh Hsing	(侯德興)	1,000	9	3,500
Li Wan Hsing	(李萬興)	300	5	500
Ho Yung Hsing	(何和興)	500	4	1,200
Wu Hsin Shun	(鄔新順)	350	4	1,000
Ch'en Fu Hsin	(陳富新)	600	4	1,500
Kao Chü Chi	(高聚記)	500	5	1,200
Chu T'ung Hsing	(朱同興)	250	3	300
Ch'en Yung Hsing	(陳永興)	150	2	300
Mao Shen Chi	(茂森記)	800	7	2,000
Yü Yung Ch'ang	(俞永昌)	300	4	500
Ch'en Jih Sheng	(陳日昇)	400	4	500
Yuan Ho	(源　和)	400	5	500
Chin Wan Hsing	(金萬興)	500	5	700
Ts'ui Teh Hsing	(崔德興)	300	3	400
Hsü Shun Hsing	(徐順興)	1,000	6	2,500
Chang Ju Chi	(張汝記)	400	5	800
Ts'ui Ting Chi	(崔定記)	300	6	500
Wu Chü Hsing	(鄔聚興)	300	5	500
Ts'ui Hsiang Hsing	(崔祥興)	500	7	1,000
Chu Mao Ch'ang	(竺茂昌)	350	3	500
Chang Ming Chi	(張明記)	400	5	600
Ts'ai Fu Chi	(蔡福記)	250	3	400
Shen Ts'ai Chi	(沈財記)	250	3	500
Hung Hsing Chi	(洪興記)	500	6	800
Total (44 shops)		$22,650	225	$94,400

WOOD-YARDS AND SAW-MILLS

With the increasing activity in building operations there has been a growing demand for planks, and in 1931 wood-yards were opened in Hangchow and Ningpo to make planks. Realizing the profit in this business, promoters in Wenchow established 16 machine saw-mills. The following table shows the saw-mills now operating in Hangchow, Ningpo and Yungchia (Wenchow) and other general particulars:

WOOD-YARDS IN HANGCHOW AND NINGPO

		Capital	Workers	Turnover
Chen Hua	(振華)	$ 3,000	10	$24,000
Fu Hsing	(福星)	2,000	12	20,000
Heng Feng	(恒豐)	5,800	18	20,000
Total		10,800	40	64,000

MACHINE SAW-MILLS IN YUNGCHIA

		Workers	Capital	Turnover
Chao Shen Lin ...	(趙森林)	15	$10,000	$38,400
Sheng Mei	(勝美)	16	6.000	36,000
Kung Ta	(公大)	8	3,000	12,600
Shun Fa Hsiang ..	(順發祥)	16	6,900	30,000
Ta Tung	(大東)	18	10,000	40,000
Chou Sheng Fa ..	(周盛發)	8	3,000	12,000
Ts'ai Heng Hsing	(蔡恒興)	16	4,000	28,000
P'an Teh Sheng ..	(潘德盛)	9	4,000	19,200
Hui Ch'ang	(匯昌)	16	6,000	33,600
Yü Teh Fa	(余德發)	16	6,000	33,600
Yuan Ta	(源大)	8	3,000	12,000
Shen Ta	(森大)	8	3,000	12,000
Yü Teh Shun	(余德順)	15	7,000	30,000
Teh Chi	(德記)	12	4,000	24,000
Yuan Shen	(源森)	18	7,000	50,000
Shun I	(順益)	8	3,000	10,000
Total		207	$85,900	$421,400

SUPPLIES OF TIMBER

Supplies for wood-working enterprises in Chekiang come largely from Anhui and the eastern part of Chekiang, but timber from abroad is also used, the annual consumption amounting to $40,000 in value. In making foreign-style furniture red wood, *hua li* (花梨), teak, *ma li* (麻栗) oak, *liu an* (柳安) and pine are bought from timber merchants in Shanghai, while fir, willow, and elm are supplied by merchants in timber-growing districts. In Chekiang the places where supplies of wood can be obtained are Chuchow, Lungyu, K'aihua, Lungch'uan, Shuichang, Chienteh, Fenshui, Chinhua, Tungyang, Wui, Hangchow and Ch'anghua. In Anhui province the places where Chekiang obtains timber supplies include Tunch'i (屯溪),

Hsiuning (休寧), Chihch'i (績溪), Chinghsien (涇縣) and Huichow (徽州).

Wood-work made in Chekiang is mostly produced by manual labor, and owing to the simplicity of business organization the management of these concerns in much easier than other lines of business. The working day in for carpenters averages about 10 hours.

Sales of Chekiang wood-work are widely distributed, with Kiangsu province the leading market. The main centers of distribution in Chekiang are Ninghsien, Linhai, and Yungchia, the first-named being also the principal export centre to outside markets.

Chekiang the smaller shops sell their products direct to consumers for cash, while the larger ones dispose of their products to wholesale dealers.

CHAPTER XXXVII

CARVED BAMBOO AND STONE

CARVED bamboo and stone work are special handicraft industries in Chekiang province. Bamboo carving is a specialty in Fenghua, where the industry was started about the middle of the Ching Dynasty by a number of amateurs. The bamboo work popular at that time consisted largely of book-stands, pen-stands, ink-cases, seal-cases, and holders for visiting-cards. By the end of the Ching dynasty the industry had made a great advance, and Mr. Yü Hsiao-hsia (俞嘯霞) started to fashion more delicate carving work. In 1912, after accepting a position offered to him at the Fenghua training-school (奉化習藝所) he started work on *chu huang* (竹黃) on stripped bamboo, on which carving is more difficult, but recently this industry has very seriously declined.

Stone-carving was started in Ts'ingt'ien (青田), but developed more rapidly in Yungchia. Quarrying at Ts'ingt'ien was started 140 years ago, when stone-seals were carved to produce characters of such grace and individuality that other could scarcely hope to duplicate them. In the beginning these stone-seals were only used locally, but in 1875 Mr. Lin Mao-chuan (林茂川) exported samples to Europe, where they were quickly disposed of, and the industry soon became very prosperous. In 1908 merchants engaged in this oversea business numbered about 100, but with the outbreak of the Great War business declined considerably. In 1922 stone-seals appeared on the market in the United States, but owing to the economic depression exports have greatly decreased of late.

During the most prosperous period of the industry, the bamboo-carving shops in Fenghua numbered four, of which only one, Ch'i Su (挹素), is still in existence. This concern, capitalized at $600, employs 18 workers, their wage ranging from $10 to $20 a month, most of them being recruited from Fenghua and Haining.

In Ts'ingt'ien there are 15 quarries, each employing about half a dozen operatives, divided into "long" and "short" workers. The former receive $6 per month in addition to lodging and board, while the "short" workers are engaged from day today, and receive 30 or 40 cents and their food. There are over 70 stone-carving works in Ts'ingt'ien, employing 400 persons, of whom three-quarters are men. The highest wage for a male worker is $30, and the lowest $20, while for female workers the highest wage per month is $15 and the lowest $7. The working day in these shops is 10 hours. Stone-carving is also carried on in Yungchia, where there are more than 20 workshops.

RAW MATERIAL

The raw material chiefly used for making bamboo carving is bamboo, supplies being abundant in Fenghua and vicinity. The annual value of bamboo used for making carved objects amounts to $1,000. Fish-glue and cow-glue, lacquer, and alcohol are also used in bamboo carving, glues being obtained from Ninghsien, and lacquer from Germany. The annual consumption of these materials is estimated as follows: Glue, $60; lacquer, $150, and alcohol, $120.

By far the greatest number of seals are made of stone, of which three kinds are in common use—"frozen" stone (凍石), "chicken blood" stone (雞血石) and *feng men shih* (封門石). "Frozen" stone is soft and fine in texture, with a lustrous surface. It is found in different shades, ranging from light yellow to reddish brown, and is further divided into *teng kuang tung* (燈光凍), *pai kuo tung* (白果凍), *feng men tung* (封門凍), *yü nao tung* (魚腦凍), *kuan hung tung* (冠紅凍), *tsu sê tung* (紫色凍), *chi shan tung* (季山凍), *chou ts'un tung* (周村凍), *pai yang tung* (白羊凍), *chu yeh tung* (竹葉凍), and *ou feng tung* (藕粉凍). Chicken blood" stone is also soft, fine, and lustrous, and of different colours, including light yellow, green, and purple. The stone invariably shows red spots on a yellow, green or purple ground, looking exactly as though stained with drops of blood, hence the name. This variety of stone is commonly known as *ts'ing shih* (青石)

and is abundant in *shan kou tsun* (山口村), *fang shan ts'un* (方山村) and *chou ts'un* (周村). Stones are also classified into course and fine qualities, the former fetching about $1 for 90 catties, while for the latter the price is $1 for 40 catties. Stones of superior quality are sold by the piece, ranging from a few dollars to several hundred, according to the unique character of then makings, the limited supply accounting for the high prices.

EXPORT BUSINESS

Fenghua carvings have a wide market, with Shanghai leading in domestic consumption and the United States in foreign markets. Shipments are also made to Hankow, the Straits Settlements, and Japan, but the annual value amounts to only about $6,000.

Bamboo carved work is first shipped by junk to Shanghai, whence it is re-exported to other domestic ports or abroad. In making shipments carved ware is packed in wooden boxes of 160 catties each. Prior to the Great War the annual production of carved bamboo work amounted to some 12,000 boxes, valued at over $1,000,000, but has now decreased to 2,000 boxes, valued at only $100,000. In 1929 merchants at Yungchia proposed to establish a training-school at Wenchow (溫州工藝館) to experiment in ways of improving finished products, but owing to the heavy slump in business the plan failed to materialize.

CHAPTER XXXVIII

PRINTING

THE PRINTING industry in Chekiang Province is centered at Hangchow, where there are 86 printers operating with a total capital of $220,000. A considerable number are also found in Yungchia and Ninghsien. Most of these are engaged in letterpress or lithographic printing, other types being very seldom seen. The following is a list of the leading printing houses in the Province:—

	Location.	Organization.	Capital.	Turnover.
Ch'eng Tsê (正則印書館)	Hangchow	Sole ownership	$45,000	$125,000
Hung Wen (弘文印書館)	„	Partnership	12,000	80,000
Chekiang (浙江印刷局)	„	„	20,000	50,000
Hsin Hsin (新新印刷局)	„	„	10,000	40,000
Ch'ang Hsing (長興印刷所)	„	„	12,000	35,000
Hangchow (杭州印刷局)	„	„	3,000	27,000
Hua Hsing (華興石印局)	„	„	4,000	25,800
Ching Hsin (競新石印局)	„	Sole ownership	8,000	25,000
Ts'ing Pai (青白印刷公司)	„	Partnership	10,000	24,000
Mei Sheng (美昇石印局)	„	Sole ownership	10,000	18,000
Chiang Yung Feng (江永豐石印號)	„	„ „	4,000	18,000
Chung Hua (中華印刷公司)	„	Partnership	6,000	15,600
Yü T'ai (裕泰彩印廠)	„	„	10,000	15,000
Ta Lu (大陸石印局)	„	„	10,000	12,000

	Location.	Organization.	Capital.	Turnover.
Yu I Shan Fang (有益山房)	Hangchow	Sole ownership	$6,000	$12,000
Ts'ai Hua (彩華石印局)	„	Partnership	6,000	12,000
Lo T'ien (樂天印社)	„	Sole ownership	2,500	9,800
Yuan Yuan (元元印刷局)	„	„ „	1,500	8,500
Hsin Min (新民印刷局)	„	„ „	1,500	8,500
Hui Shang (滙商公司)	„	„ „	3,500	6,000
San Min (三民印刷公司)	„	Partnership	3,000	6,000
Kuang Hua (光華印刷局)	„	„	2,500	5,000
Wu Pen (務本印務製本所)	„	Sole ownership	1,200	4,500
Ta Min (達民印務局)	„	„ „	1,200	4,000
Chung Hua (中華美術印刷公司)	„	„ „	1,500	4,000
Ta Chung Yang (大中央印刷所)	„	„ „	2,000	3,500
Hsieh Ch'eng (協成印務局)	„	„ „	1,450	3,000
Ho Hsing (合興印務局)	„	„ „	1,500	2,900
P'u Li (溥利印刷局)	„	„ „	1,500	2,500
Ta Chung (大中印刷局)	„	„ „	1,700	2,200
P'u Li Branch (溥利印刷公司)	„	„ „	500	2,200
San Hsing (三星照相製版公司)	„	„ „	1,200	2,200
Ta T'ung (大同印刷局)	„	„ „	600	2,100
Mei Li (美利印刷局)	„	„ „	2,000	2,000
Heng Yuan Ch'ang (恒源昌)	„	„ „	350	2,000
Chekiang (浙江印務局)	„	„ „	500	1,800

	Location.	Organization.	Capital.	Turnover.
Hui Hsing (慧興印刷所)	Hangchow	Sole ownership	$400	$1,700
Lien I (聯益印刷店)	"	" "	400	1,600
Hsin Kuang (新光照像製版公司)	"	" "	500	1,500
Ju Yeh (儒業印刷所)	"	" "	700	1,500
Ch'ang Ming (昌明印刷所)	"	" "	500	1,500
Ch'ang Ch'ang (長昌印刷局)	"	" "	800	1,500
Wu Lin (武林石印局)	"	" "	300	1,400
Ch'uan Chê (全浙印務局)	"	Partnership	600	1,200
Yueh Hua (悅華印刷局)	"	Sole ownership	500	1,200
Chiang Nan (江南印務局)	"	" "	300	1,400
Hsing Chi (興記印務局)	"	" "	400	1,200
Chih Chiang (之江印務局)	"	" "	500	1,200
Shen Yuan Hsing (沈源興)	"	" "	480	1,000
Min Li (民利印務局)	"	" "	500	1,000
Shih Chang (士章印刷社)	"	" "	400	1,000
Tung Ya (東亞印務局)	"	" "	500	1,000
Min Toh (民鐸石印局)	"	" "	500	1,000
T'ai Ch'ang (泰昌印務局)	"	Partnership	1,000	1,000
Chun Ho (鈞和印刷有限公司)	Ninghsien	——	15,000	32,000
Hua Sheng (華陞印刷公司)	"	——	12,000	30,000
Ningpo (寧波印刷公司)	"	——	10,000	25,000
Ta Hua (大華印刷所)	"	Partnership	3,000	6,000

	Location.	Organization.	Capital.	Turnover.
Hua Ta (華達印刷所)	Ninghsien	Partnership	$3,000	$6,000
Kuo Kuang (國光印刷所)	"	"	1,000	6,000
Mei Mei (美美印書館)	"	"	1,500	4,000
Chang Jung T'ai (章榮泰印刷所)	"	Sole ownership	1,000	4,000
Mei Pen (美本印刷店)	Yungchia	Partnership	8,000	40,000
Mei Ta (美大印刷店)	"	"	6,000	30,000
T'ung Wen (同文印刷店)	"	Sole ownership	2,000	20,000
Teh Ts'ing (德清印刷店)	"	" "	1,500	20,000
Wu Pen (務本印刷店)	"	" "	2,100	15,000
Ching I (精一印刷店)	"	" "	1,000	10,000
Shou Min (壽民印刷店)	"	" "	700	8,500
Chin Hsia (錦霞印刷店)	"	" "	500	8,000
Po Li (博利印刷店)	"	" "	600	7,000
Mei Hsia (美霞印刷店)	"	" "	500	6,000
Jih Hsin (日新印刷店)	"	" "	500	4,000
Chiu Ch'ang (久昌印刷所)	Fuyang	——	——	——
Hsin Hsin (新新印刷所)	"	——	——	——
Tsuch'i	Tsuch'i	——	2,000	2,000
(慈谿印刷公司)				
Ch'ang Ming (昌明印刷所)	Yüyao	——	8,000	13,000
Work House for Poors (縣立貧民習藝所)	"	——	2,200	2,000
Hsieh Hua Ch'ang (協華昌印刷社)	Ch'enghsien	——	1,000	2,000
Ch'eng Hsin (峰新印刷所)	"	——	800	1,500

	Location.	Organization.	Capital.	Turnover.
T'an Sheng (郭聲印刷所)	Ch'enghsien	——	$200	$ 500
T'ai Yang (太陽印刷社)	„	——	800	1,200
Li Ch'eng (立成印刷社)	Shuichang	——	700	1,900

Including the above concerns with 42 smaller establishments in the Province, the aggregate capital amounts to $297,585, and the turnover during 1932 to $1,032,000.

Most of the paper and ink used is imported, only about 20 or 30 per cent being home products. The following table shows various materials used by Chekiang printers, together with approximate prices and sources of supply:—

	Price	From
M. F. Glazed Printing Paper	$18.00 per ream	Sweden
M. F. Unglazed Printing Paper	30.00 „ „	„
M. G. Cap	7.80 „ „	U.S.A. and home factories
Waxed paper	11.80 „ „	Germany
Newsprint, White	10.00 „ „	Sweden and home factories
Bond Paper	40–80 „ „	Great Britain, U.S.A. and Sweden.
Paper made of wood pulp	30.00 „ „	Great Britain, U.S.A. and Sweden.
Glass paper	5.60 „ „	———
Glazed paper	3.70–4.50 „ „	Germany, U.S.A. and Sweden.
Art Printing paper	——	Great Britain & U.S.A.
Lienshih paper (連史紙)	5.80 „ „	Home factories
Visiting cards	0.05 per 100	———
Ink	0.30 per lb.	Germany, U.S.A. and home factories.
Colored inks	0.30–3.50 „ „	Germany and home factories.
Colored inks for printing tin plates	1.00–7.00 „ „	Germany.

CHAPTER XXXIX

JOSS-PAPER MANUFACTURE

PAPER coated with tinfoil, used for making "joss money" and similar sacrificial offerings, is a special product of Chekiang Province, with Shaohsing the principal producing center, though the industry is also established on a much smaller scale at Hangchow and Ninghsien. The total annual output amounts in value to $29,000,000, and over 200,000 people are wholly or partially dependent on this business. The following table gives some details relating to the leading joss-paper makers in Shaohsing:—

		Established	Capital	Staff	Workers
Chang Jen T'ai	(張仁泰)	1926	$500	3	15
Yao Jui T'ai	(姚瑞泰)	1903	200	1	10
Hua San T'ai	(華三泰)	——	200	3	14
Hua Teh Chi	(華德記)	——	200	3	15
Hua Yuan T'ai Ting Chi	(華源泰鼎記)	——	200	2	10
T'ung Sheng Pin Hai Chi	(同聲斌海記)	1912	100	2	12
Ni Shun Hsing	(倪順興)	1917	300	1	8
Hu Heng Yü	(胡恆餘)	1912	200	3	12
Heng Chi T'ai . ..	(恆吉泰)	——	300	2	15
K'ai T'ai	(開 泰)	1928	600	3	15
Ch'en Ting T'ai ...	(陳鼎泰)	1924	200	2	12
T'ang Kung Mei ..	(湯恭美)	1909	500	3	14
Sun Teh Ch'eng Chun Chi	(孫德成鈞記)	1912	400	2	12
Wu Ping Chi	(吳炳記)	——	500	3	20
Chin Jui Chi	(金瑞記)	1929	500	2	14
T'ien Yuan Jun ...	(田源潤)	1926	500	2	9
Yü Yü Sheng	(喻裕盛)	1909	500	3	12
Cheng Ch'ien Ta ...	(鄭乾大)	——	600	2	10
Feng Chin Ch'ang .	(馮晉昌)	1911	300	2	10
Chien Jui Chi	(錢銳記)	——	200	—	20
Ch'en Hsiang Chi .	(陳相記)	1922	200	1	9
Fu Ch'uan Chi	(傅全記)	1912	400	2	12
Li Wan Hsing	(李萬興)	——	300	2	12
Ch'en I Ta	(陳義大)	1923	100	3	12

		Established	Capital	Staff	Workers
Chao Wan Yuan ...	(趙萬源)	1912	$2,000	14	150
Yü T'ai Mao	(裕泰茂)	1930	300	3	22
T'ai Ho	(太 和)	1919	300	3	15
Ting Heng I	(丁恒益)	——	200	3	20
Ting Ch'ao Chi	(丁創記)	——	200	2	12
Yuan T'ung Yuan K'ui Chi	(惠同源號記)	——	500	7	120
Hsieh Ch'ang	(協 興)	1925	200	4	26
Sun Tung Yü Yen Chi	(孫同豫衍記)	1930	200	2	18
Sun Kui Chi	(孫佳記)	1928	100	2	18
Yü Ho Po	(裕和柏)	1925	300	3	10
Hsieh Shun Ho ...	(謝順和)	1928	100	2	10
Yang Kung Yü Ying Chi	(楊公裕英記)	——	500	5	24
Ch'en Wan Hsing .	(陳萬興)	1912	300	1	12
Yuan T'ung Ho ...	(惠同和)	1929	300	2	20
Chin Yung Hsing ..	(金永興)	——	500	3	11
Kao Tai Yuan Ch'ao Chi	(高泰源潮記)	——	500	2	12
Chang Jung Chi ...	(張榮記)	1921	100	3	15
Ho Sheng Chi	(何甦記)	——	300	3	20
Hsieh Chi Yuan ...	(協記源)	1918	200	2	10
Lu T'ien Chi	(陸添記)	1909	200	2	13
Cheng Wan Ch'ang	(鄭萬昌)	1912	200	3	13
Hsia Wan Hsing .	(洽萬興)	1909	200	3	10
Hu Fu Hsing	(胡復興)	——	800	5	30
Yü I Hsing	(俞義興)	——	200	2	12
Ho Yuan Jen Ch'ien Chi	(何源仁謙記)	1917	400	4	15
Hu Yuan Ch'ang ..	(胡源昌)	1926	400	4	15
Hu Yung Yuan ...	(胡永源)	1927	400	6	15
Lou Chü Hsing ...	(宏聚興)	——	200	1	15
Ch'eng Ch'ao Chi ..	(鄭創記)	——	100	—	10
T'ung Sheng Chi ..	(童甦記)	1910	200	2	12
Pien Shun Ch'ang Ch'ing Chi ...	(邊順昌慶記)	1920	200	2	12
Pien Shun Ch'ang Hsieh Chi	(邊順昌協記)	1929	200	2	12
Yen Chi Chang ...	(嚴吉昌)	1917	200	2	12

		Established	Capital	Staff	Workers
Ting Shun Hsing ..	(丁順興)	1926	$300	2	18
Ch'en Chü Hsing Ch'uan Chi ...	(陳聚興泉記)	1926	300	3	15
Shih Heng Chi	(史恆記)	1912	400	3	18
Fan Liang Chi	(范良記)	1930	300	5	16
Ch'en Ping Chi ...	(陳炳記)	1916	300	5	15
Wang Ch'eng T'ai ..	(黃誠泰)	1926	300	3	12
Ho Yuan Jen Fu Chi	(何源仁福記)	1926	400	3	15
I Jun	(義 潤)	1912	100	2	16
T'ang Mao Hsing ..	(唐懋興)	——	400	2	12
Fu Cho Chi	(傅佐記)	——	300	1	16
Ni Ch'in Hsiang ..	(倪彭祥)	1920	300	5	30
T'ung T'ai Ho	(同泰和)	1919	400	2	12
Ch'eng Yuan	(誠 源)	1926	600	4	20
Wang Yü Yuan ...	(王裕源)	1921	200	3	16
Fu Sheng Mao	(傅昇茂)	1917	300	3	20
Shih Mao Ch'ang ..	(史茂昌)	——	500	2	18
T'ung I	(同 義)	1920	600	4	13
Ho T'ung Ta	(何同大)	1920	400	3	14
Kuo Kui Chi	(郭桂記)	1914	200	2	16
Yü Cho Chi	(郁佐創)	1930	400	4	16
Fu Yuan Ch'ang ..	(福源昌)	1916	400	4	13
Chang Yuan Ho ...	(張源和)	1917	400	2	15
Shun Yü Ch'eng ...	(順裕成)	1919	200	2	20
Shan T'ung Ho	(善同和)	1915	500	2	16
Shen K'ang Yü ...	(慎康餘)	1919	300	2	16
Shen T'ung Yü	(沈同裕)	——	500	3	14
Heng Sheng Yü ..	(恆升裕)	1912	500	3	17
Fu T'ai Chi	(傅泰記)	1919	300	4	13
Feng Ch'uan Chi ..	(馮泉記)	1920	100	3	16
Ch'en Ping Chi ...	(陳炳記)	1912	200	3	15
Li Yung T'ai	(李永泰)	1919	100	2	12
Hsü Pao Chi	(徐寶記)	1923	200	3	15
Ni San Ho	(倪三和)	1930	200	2	15
Wang Shun T'ai ..	(王順泰)	1926	100	1	15
Ch'ien Ho Hsing ...	(錢合興)	——	300	4	20
Ch'ien Yü	(乾 裕)	1912	300	4	16
Lin Shou Chi	(林壽記)	1912	400	2	16
Chin Ch'ang Hsia ..	(錦昶洽)	1928	1,000	7	30
Ch'ien Yuan Hsin ..	(錢源興)	1912	300	2	21
Ch'i Mao K'ang ...	(郗茂康)	1913	200	2	14

	Established	Capital	Staff	Workers
T'ung Yuan T'ai ... (同源泰)	1919	$500	2	30
Tung Hsieh T'ai .. (東協泰)	1920	400	4	30
Wang K'ui Chi ... (王奎記)	——	200	2	16
Miao Sheng T'ai .. (繆昇泰)	1900	100	1	12
Shen Ch'ao Chi ... (沈潮記)	1917	100	1	15
Chu Li Hsing ..... (朱立興)	1922	300	3	20
Shou Liang Chi ... (壽良記)	——	500	5	16
Fu Ch'ien Ch'ang .. (福乾昌)	1920	400	2	19
Ch'uan Lien Chi .. (全連記)	1914	300	1	12

MANUFACTURING PROCESS

The making of joss-paper is a slow and complicated process, the work being done by three classes of operators. The first are known as *po tso* (箔作) or tin-foil makers, who number over 1,000 in Shaohsing, employing about 20,000 workers, 60 in Hangchow, with 3,000 workers, and 70 in Ninghsien, with 1,400 workers. The operations of a *po tso* start with the melting of tin ingots into strips 3½ inches (Chinese measure) long, 1½ inch wide, and 0.05 inch thick. These are tied into bundles of 376, and then made into bigger bales of 2,256 sheets. The large bundle, which weighs about 36 catties, is then handed over to the "lower" department or *hsia chien* (下間) to be beaten out. One-half of a small bundle (188 strips) is used as a unit for beating, which is continued until the strips are 8 inches long and 3½ inches wide. The strips are then cut into four equal parts, to be further beaten out until they are 1½ feet long and 6 inches wide, when they are again cut into two equal parts for a third beating, which is continued until they are 2¼ feet long and a foot wide. The strips are then baked for about five or six hours before the fifth beating takes place, which lasts until the strips are 3 feet long and 1¼ feet wide, after which they are separated, wrapped in paper, and handed over to the "upper" department or *shan chien* (上間) for further beating. During the separation process, if the strips got stuck together, they have to be discarded and remelted.

The workers in the "upper" department cut the strips into two equal parts, and put them into a baking oven before the sixth beating takes place, which lasts until the strips are 1.6 feet long and 1.5 feet wide, when the strips are prepared for the seventh beating, which lasts until they are 2.1 feet long and 2 feet wide. The strips are again separated and cut into four equal parts for the eighth and final beating, which continues until they strips are 2.2 feet long and 0.62 feet wide. The tinfoil, which is now known as *yeh tsu* (頁子), is then handed over to the trimming department for a final smoothing process, and is cut into pieces six inches long, and 4.8 inches wide. After wrapping the work of the *po tso* is completed, and the foil is turned over to the *po p'u* (箔舖) or joss-paper shops for sale. The complete process of preparation lasts about one month, and out of 36 catties of tin over 60,000 sheets of tinfoil are obtained.

The *po pu,* which number 90 in Hangchow, 60 in Ninghsien, and 700 in Shaohsing, after receiving the tinfoil from the *po tso,* hand it over to the pasters, known as *pei hu* (裱戶), together with a stock of paper cut in sheets of equal size. The work of the pasters (mostly women and girls, and numbering 30,000 in Hangchow, 80,000 in Shaohsing, and 10,000 in Ninghsien), is confined to this one process, and great care has to be taken to prevent breakage. After the tinfoil has been pasted on the paper it is returned to the *po pu,* which then pass the sheets to the *ya tso* (砑作), to be smoothed out and made more lustrous in appearance. There are 5,000 firms in Shaohsing doing this work, employing 25,000 people, with 180 more in Hangchow with 600 workers, and another 100 concerns in Ninghsien, with 500 operatives. The final process is the counting and binding of the joss-paper, which is made up in units of *kuai* (塊), containing 3,000 sheets, and returned to the *po pu,* where the goods are "chopped" and made ready for sale.

The operatives in this industry work in shifts of seven or eight hours, and are all paid by piece-rate. The Beaters and melters are paid by units of *ch'ih* (只),

divided into "big" and "small" *ch'ih*. A "big" *ch'ih* consists of 2,256 tin sheets, 36 catties, while a "small" *chih* contains 1,500 sheets, and weighs 23 catties. The melters receive $0.306 for melting each "big" *ch'ih* which works out at an average of $20 per month. Beaters in the "lower" department receive $4 for a "big" *ch'ih* and $2.50 for a "small" one, which gives an average of $14 per month for the former, and $20 per month for the latter. Cutters are paid by units of *p'ei* (焙) which contain 63,000 sheets. For every *p'ei* cut 16 cents is paid, which gives an average wage of $15 per month. Women engaged in separating the tinfoil are paid from 28 to 30 cents for every "big" *ch'ih* pasters and smoothers are both paid by units of *k'uai* of 3,200 sheets each, the rate being from 10 to 20 cents per *k'uai* for pasters, and 20 to 30 cents for smoothers.

SUPPLIES OF RAW MATERIAL

The tin used in Chekiang is shipped from Yunnan Province, known as *kuang kung* (廣 硔), and also imported from the Straits Settlements, known as *fu chu* (福 足), the latter being better in quality. A third variety, known as *lu hsi* (爐 錫), is also used, and is extracted from the ashes left from the burning of joss-paper. It is very inferior in quality, and is only used to mix with *kuang kung* or *fu chu*. Owing to its brittle nature, the *fu chu* cannot be used alone for making tinfoil, and must be mixed with *kuang kung* or *lu hsi*. Recently a new plan has been adopted for mixing all three kinds of tin in making foil, the proportions being 32 parts of *kuang kung*, 52 of *lu shi*, and 16 of *fu chu*. The mixing of different tin has a very important bearing on the quality of tinfoil, for a too brittle alloy means that the foil will be easily broken, and a too soft alloy will cause the sheets of foil to stick together. At Shaohsing the annual consumption of *kuang kung* and *fu chu* amounts to 30,000 bars of 75 catties, valued at $3,000,000, while the *lu hsi*, used is valued at $1,500,000. The consumption figure for Hangchow is $2,800,000, and for Ninghsien, $2,500,000, making a grand total for the whole Province of $9,800,000.

The paper used consists of *lu ming* (鹿鳴), *ching fang* (京放), *tuan fang* (段方), *lien wu* (連五), *huang chien* (黃箋), *Ch'ang huang* (廠黃), and *ning chuang* (甯莊). The following table shows the production districts, size, and price, of different kinds of paper used in the joss-paper industry:—

Places of Production	Length (feet)	Width (feet)	Sheets in bundle	Price per bundle
Lu ming				
Fuyang, Fenghua, Chuch'i, Hsiao-shan, and Shao-hsing.	—	—	3,000	$4.50-$7.00
Ning chuang				
Chuch'i, Shao-hsing	2.10	0.92	2,960	6.60
	2.05	0.86	2,800	5.60
	2.30	0.90	2,800	8.50
Ning chuang				
Fuyang, Hsiao-shan, and Chuch'i	3.24	1.50	2,700	6.00- 8.00
Tuan fang				
Fuyang & Hsiao-shan	1.34	1.05	2,200	6.00- 7.00

VARIETIES OF JOSS-PAPER.

The joss-paper made in Chekiang is known under a host of names, the principal being *shuang chiu* (雙九), also known as *yang huang* (楊黃), *chien men* (尖門) or *chung ho* (鐘何), *ch'ang hang* (長行), *pû ch'o* (普車), *ke tang* (戡當), *hao shih* (好市), *lu wu* (六五), *shi pa* (十八), *ssu fang* (四方) and *lu fang* (六方). Under each head the product is further divided into four grades, with *tsien* (尖) or *chien* (千) representing the best quality, *er* (二) *or t'ung* (三), the second grade, *san* (三), the third quality, and *hua* (花) the fourth, the difference in price between the various grades ranging from 20 to 60 cents. Recently, the Joss-Paper Business-Tax Collectorate (箔類營業稅局) of Chekiang classified all varieties of joss-paper produced in the Province in 20

grades, and the official price is fixed for each grade as follows:

Grade	Price per kui 3,000 sheets
1	$6.00-$8.00
2	7.20
3	5.20- 6.80
4	5.00- 6.50
5	4.80- 6.10
6	4.80- 6.00
7	4.60- 5.70
8	4.40- 5.50
9	4.20- 5.20
10	4.00- 5.00
11	3.70- 4.80
12	3.60- 4.60
13	3.00- 4.20
14	2.80- 4.00
15	2.60- 3.70
16	2.50- 3.50
17	2.30- 3.00
18	2.00- 2.60
19	1.70- 2.30
20	1.00

The total production in the whole Province is valued at $28,600,000, including $13,000,000 for Shaohsing, $8,500,000 for Hangchow, and $7,000,000 for Ninghsien.

MARKETS

Chekiang joss-paper is distributed to markets throughout the entire country. About 20 per cent of the total production is consumed in the Province, 60 per cent is disposed of in Kiangsu Province, and the remaining 20 per cent, among other provinces. The business is conducted through *po chuang* (箔莊), which are merely commission-agents between the manufacturers and and purchasing agents from other localities. The following is a list of leading *po chuang* operating in Shaohsing, Hangchow and Ninghsien, together with the date of establishment, capital, annual business turnover, and number of staff and workers:—

		Location	Established	Capital	Annual Turnover	Staff	Workers
I Ch'ang Teh	(益昌德)	Shaohsing	1930	8,500	550,000	9	3
Meng Heng Chi	(孟恒記)	„	1921	4,000	170,000	—	—
Ch'ien Feng	(乾豐)	„	1930	10,000	800,000	8	2
Hui Ch'eng Ch'ang	(彙成昌)	„	1927	8,000	500,000	10	3
Ch'eng Ch'ang	(誠昌)	„	1928	10,000	850,000	10	3
Hou Ch'ang	(厚昌)	„	1928	2,000	190,000	11	3
Wan T'ai	(萬泰)	„	1930	2,000	170,000	1	2
Chih Ta	(志大)	„	1926	5,000	300,000	9	4
Yuan Jun	(源潤)	„	1930	7,000	500,000	9	4
Ch'eng T'ai Ch'ang	(誠泰昌)	„	1930	5,000	300,000	9	2
Hung Ch'eng	(洪成)	„	1931	8,000	550,000	9	3
Ch'ien Sheng	(乾盛)	„	1927	8,000	550,000	10	3
Chien T'ai	(乾泰)	„	1922	8,500	600,000	11	3
Ch'eng Feng Hsieh	(誠豐協)	„	1925	8,000	500,000	10	3
Shou K'ang	(壽康)	„	1930	5,000	200,000	2	2
Yuan Ch'ang	(源昌)	„	1930	7,000	500,000	9	4
Shen K'ang	(申康)	„	1917	5,000	450,000	—	—
Tun Yuan	(敦源)	„	1927	4,000	300,000	—	—
Chih Cheng	(志成)	„	1912	10,000	800,000	10	3

		Location	Established	Capital	Annual Turnover	Staff	Worker
Yuan Chang Yü	(源章裕)	Shaohsing	1925	10,000	850,000	11	3
Chiu Chang	(九 章)	„	1931	4,500	200,000	7	6
Chien Ch'ang	(乾 昌)	„	1928	8,000	500,000	9	3
Chi Ming Chi	(祁明記)	„	1927	8,000	500,000	5	1
Chen Ch'ang	(震 昌)	„	1930	5,000	350,000	9	3
Chang Chi Chi	(章記記)	„	1926	4,500	250,000	3	1
T'ien T'ai	(添 泰)	„	1931	5,000	300,000	4	1
Yang Ying Chi	(楊英記)	„	1893	1,000	110,000	6	3
K'un T'ai	(坤 泰)	„	1913	4,000	280,000	—	—
Yuan Lung	(源 隆)	„	1914	5,000	250,000	—	—
Yuan T'ai Ch'eng	(元泰誠)	„	1932	5,000	300,000	—	—
Liu Yuan Ts'ang	(柳源滄)	Hangchow	——	——	——	—	—
Chin Teh Yuan	(金德源)	„	——	——	——	—	—
Chang T'ung T'ai	(張同泰)	„	——	——	——	—	—
Jui Yü Lung	(瑞餘隆)	„	——	——	——	—	—
Ch'en T'ung T'ai	(陳同泰)	„	——	——	——	—	—
Shen T'ung Ho	(沈同和)	„	——	——	——	—	—
Ch'ien Jung Ch'un	(錢榮春)	„	——	——	——	—	—
T'ung I Hsiang	(同益祥)	„	——	——	——	—	—

		Location	Established	Capital	Annual Turnover	Staff	Workers
Feng San I	(馮三益)	Hangchow	——	——	——	—	—
Ch'en Yuan T'ai	(陳源泰)	„	——	——	——	—	—
Shen Sheng Mao	(沈生茂)	„	——	——	——	—	—
Ts'ui T'ai Heng	(萃泰亨)	„	——	——	——	—	—
Lo Yü T'ai	(羅裕泰)	„	——	——	——	—	—
Yang Yü Jun	(楊裕潤)	„	——	——	——	—	—
I Ch'ang Hsiang	(益昌祥)	Ningpo	——	——	2,000	—	3
T'ung Ch'un	(同 春)	„	——	——	10,000	—	6
Jui T'ai	(瑞 泰)	„	——	——	12,000	—	7
Fang K'un Ho	(方慤和)	„	——	——	10,000	—	5
Hsia Ho	(洽 和)	„	——	——	12,000	—	6
T'ung K'ang	(同 康)	„	——	——	11,000	—	3
Lung Chi	(隆 記)	„	——	——	10,000	—	6
Yuan Yuan Hsieh Chi	(源源協記)	„	——	——	3,000	—	2
Shen Ta Cheng Chi	(慎大成記)	„	——	——	1,000	—	2
Sheng Chang Hsiang Chi	(昇昌祥記)	„	——	——	1,000	—	2
Kuo Hsiang Chi	(郭祥記)	„	——	——	1,000	—	2
Hsieh Ch'eng	(協 成)	„	——	——	1,000	—	2
Lin Ch'ang Chi	(林昌記)	„	——	——	1,000	—	2

These *po chuang*, in addition to soliciting business, also take charge of packing and shipping goods. They have their own guilds to look after their particular business interests.

JOSS COINS

In addition to the making of joss-paper, there is another group of workers engaged exclusively in the making of joss coins. This work is done by two distinct classes of operators—those engaged in making a special tinfoil, or *shui hsi* (水錫), used only for joss coins, and those making the imitation coins. There are 12 shops belonging to the first group operating in Hangchow, with the Kao Ho Hsing (高合興) located at Er Sheng Miao (二聖廟), and the Hsin T'ai Hsing (新泰興) at Kuan Chiao Chih chieh (貫橋直街) the most important. The total capital invested in this trade amounts to $21,000, and a total of 360 workers are employed. The work consists of melting down of tin ingots and the beating of sheets. Melters are paid by units of *cho* (桌), or 1,280 sheets, at the rate of 22 cents per *cho*, and a skilled worker can handle 3,800 sheets a day. The beating is done in three departments, the "upper" or *shan chien* (上間), "middle" or *yao chien* (腰間), and "lower" or *hsia chien* (下間). Four beatings are conducted in the "lower" department, and the process lasts from 2½ to 4 days, after which the sheets are turned over to the "middle" department, where further beating is conducted. During this process rice-powder is laid between the sheets to prevent them sticking together. The beating in this department lasts about 1½ or 2 days, when the sheets, now thin enough for use, are handed over to the "upper" department, where a final beating takes place, and the tinfoil is cut into 10 inch squares and is ready for market, this work taking about two days. Workers in the various departments are paid on different scales—$16 per month for the "lower" department, $18 for the "middle," and $20 for the "upper." The price of the tinfoil thus prepared is $1 for 9½ *liang*

(Chinese ounces), and the total turnover amounts to $260,000 a year.

Over 130 makers of joss coins are operating in Hangchow, mostly in the district of Huhsü (湖墅). The capital invested in this business amounts to $12,000, with Wu Chin Ch'ang (吳錦昌) located at Hai Yueh Ch'iao (海月橋), T'ao Wan Shun (陶萬順) at Ts'ang Chi Shang (倉基上), and Hsieh T'ien Shun (謝天順) at Chung An Ch'iao (衆安橋), the most important concerns. The total number of workers employed is 930, including 180 apprentices. The manufacturing process starts with the pasting of tinfoil on paper, known as *kao chih* (稿紙), or *huang shan chih* (黃山紙), a thick yellow paper made and sold in Chuich'i, Shaohsing, Fuyang and Hsiaohshan (小和山), near Hangchow, at $3.20 per picul. The tin foil-covered paper is then pressed into the shape of a coin, and the process is completed by stamping the surface of and milling the edge. All workers are paid on a piece-work basis, pasters receiving 30 cents per 100 sheets, paper-cutters 12 cents per 10,000 pieces, stampers, 25 to 30 cents per 10,000, and millers 10 cents per 10,000. An expert paster can handle 100 sheets a day, a cutter 26,000 pieces, stampers, 10,000 pieces, and millers, 30,000.

The chief market for joss coins is Kiangsu, with Hupeh and Hunan secondary consumers. Coins with milled edges are sold at from 2 to 10 cents per 100, and those with plain edges at $0.008 to $0.02 per 100. The total annual output for the province is put at 850,000,000 pieces, valued at $400,000. Supplies for outside markets are shipped in cases containing 300 packages, each of 100 coins. The business tax imposed is $30.32 per case.

CHAPTER XL

MINOR INDUSTRIES

IN ADDITION to the industries described in previous chapters, there are also in the Province a number of smaller enterprises engaged in making daily necessities such as paper fans, face-powder, chop-sticks, scissors, writing brushes, "wooden fish" gongs, and rattanware. The following is a brief description of these industries.

PAPER FANS

Fans made in Hangchow have enjoyed nation-wide fame since the Sung Dynasty, about 700 years ago. During the prosperous days of the late Ching Dynasty, there were over 50 fan-makers in the city, but with the increased use of straw hats and electric fans, demand for paper fans has fallen off. The number of fan-makers has dwindled to 14, of which the Shu Lien Chi (舒蓮記), capitalized at $15,000, is the largest, with the Wang Hsing Chi (王星記) and Hui Ho T'ai (惠和泰) next in importance. The aggregate capital of the industry is estimated at $26,000, and the annual turnover at about $159,000. Workers, over 200 in number, are mostly recruited from Hsiaoshan and Shaohsing, and are paid from 40 to 50 cents a day, the total wages paid being $32,100 a year.

The essential raw materials used in making paper fans consist of paper and bamboo, the former providing the web of the fan, while the bamboo gives the frame. In addition to bamboo, which is produced in nearby districts, sandalwood and imitation ivory, both from Canton, are also used for making frames. Carved bamboo frames of most elaborate workmanship are shipped from Soochow, Kiangsu Province, some fetching as much as $40 each. The paper used in making fans is of two kinds; namely, *t'ao hua chih* (桃花紙), or "peach blossom" paper, and *lu chi chih* (六吉紙) The former is a waterproof paper produced at

Yutsien, while *lu chi chih* is a white paper imported from Kiangsi Province. Besides paper and bamboo, paint is also an important item in decorating paper fans, the best variety used by Hangchow fan-makers being called "persimmon" paint (柿漆), a product of Chuchi. Other indispensable materials are tea oil, glue, and cow sinews.

The process of making folded paper fans, though far from complex, requires a great deal of time and labor. The work is usually divided into two parts: frame-making and web-making. The frame is composed of two stays and several ribs. In making the latter, bamboo sticks are first cut to a uniform length of four inches before they are split lengthwise into four equal parts. In making stays, the bamboo is cut into lengths of eight inches and split lengthwise into two equal parts. Then both stays and ribs are carefully polished and filed until absolute smoothness and proper thickness are obtained. The sharp corners of the lower end of the stick, which is cut narrower, are filed off and the opposite end of the rib is cut thinner so as to make it more flexible. This is done in the belief that the quality of a fan is dependent upon the flexibility of the ribs, as when in use, they will create a strong current of air with little effort. In order to avoid breakage, a thin layer of glue is put on the fragile ribs before cutting and filing. The finished sticks are then handed over to sorters for selection, in the course of which imperfect ones are discarded and the crooked ones ironed straight. Finally, the sticks are colored black and fastened together with a piece of cow sinew or metal rivet.

When the frames have been completed, they are ready for mounting. The paper is first cut into proper shape and size to suit the frames, and a layer of "persimmon" paint applied to both sides of the ribs before the paper web is mounted. The mounting is done on both sides of the frame and the paint is used to keep the paper close to the ribs. After the web has been mounted, the fan is hung on a wall for a few days, and when thoroughly dried is taken down and doubled over into as many foldings as the number of ribs contained in the fan. This folding is done by experts who wear artificial nails, usually made of cop-

per, on their fingers in order to make the folding lines more conspicuous. To keep these lines in place on the fan, it is tightly bound with a piece of string for 18 months before being ready for the market.

Many varieties of fans are made in Hangchow, but generally may be classified into folded and round shapes. The annual production of folded fans is about 500,000 pieces, and that of round fans 4,000 pieces. In addition, 4,000 fans made of palm leaves are made annually. The average price of a folded fan is about 30 cents, round fans, 30 cents, and palm leaf fans, 10 cents.

Hangchow fans are shipped to all parts of the country, Hunan and Hupeh being the chief markets, with Kuangtung and Kuangsi next. Fans destined for distant markets are packed in wooden cases containing 108 pieces, and orders are usually placed with the makers in the spring.

FACE-POWDER

Before the introduction of imported cosmetics, the face-powder manufactured in Hangchow was used throughout the country, but for some years this industry has been steadily on the decline, and at present there are only 15 makers operating in the city, the most important being K'ung Feng Ch'un (孔鳳春) at Kuan Hsiang K'ou (官巷口), Wang Feng Ch'un (王鳳春) at Chung An Ch'iao (衆安橋), and Feng Pao (鳳苞) at T'ung Ch'un Fang (同春坊). The total capital invested in this business amounts to about $30,000, ranging from $500 to $18,000 in each case, with an annual business turnover of from $40,000 to $50,000. About 70 workers are employed, mostly recruited from Ningpo and Shaohsing. Wages are paid on a piece-work basis, the rate being $9 per *kang* (a large earthenware vessel), and the average earnings of a worker are about $20 per month.

The chief materials used in this industry consist of quarried stone, (produced in Wuhsing), musk, (imported from Yunnan and Kuichow Provinces), and cassia buds, (a local product).

In addition to different kinds of face-powder, cold cream, hair lotion, perfume, and glycerine are also manufactured.

The annual production of powder exceeds 100,000 boxes, averaging 40 cents each, the aggregate total production being about $44,000.

BAMBOO CHOPSTICKS

T'ienchu chopsticks are popular as souvenirs among Chinese visitors to Hangchow, and derives their name from the bamboo groves on T'ienchu Hill (天竺山), a lovely spot near the West Lake, and it was from bamboos grown on this particular hill that these chopsticks were originally made. There are 25 shops engaged in this industry, of which 10 are engaged exclusively in making chopsticks, while the other 15 also make combs and bamboo baskets in a small way of business.

The chopstick makers in Hangchow are all the total capital invested in the industry being estimated at $7,500, ranging from $100 to $500 for each establishment. The Wang Lao Niang (王老娘), T'ang Shun Hsing (湯順興), and Ch'en Yung Hsing (陳永興), all located at Ta Ching Hsiang (大井巷), are the most famous makers.

Bamboo sticks are naturally the chief raw material used in making chop-sticks, and Ningpo, Shangyu and Chuchi are the principal supplying centers. The two species of bamboo best suited for making chopsticks are *tsien chu* (箭竹, *Phyllostachys bambusoides*) and *shan pei chu* (山白竹, *Bambusa veitchii*). Both are luxuriantly grown in almost every *hsien* of eastern Chekiang. Unlike other species of bamboo, which are usually sold as they stand, the owners of *tsien chu* and *shan pai chu* groves undertake to cut the plants before selling. The bamboo sticks are sold to wholesale agents known as *shan ke* (山客) in the various producing districts, and are packed in bundles of 100 pieces sent in junks to Hangchow, where canvassers solicit orders from the various chopstick makers. The recent market price for bamboo sticks in Hangchow is about $20 per 10,000 pieces.

The process of making chopsticks is very simple. The bamboo sticks are first carefully sorted and cut to a uniform length before the outer green covering is removed. Plain chopsticks are polished and filed until absolute smoothness and roundness are obtained and then are branded with some fancy design by red-hot irons. At the top of the branded end, which is the holding end, glass, imitation ivory, or steel beads are mounted. For expensive chopsticks silver ferrules are sometimes used. The next step is to have the entire stick coated with a layer of tea oil, which is colorless and transparent, in order to give a lustrous finish. The chopsticks are then handed over to the sorters for final selection, imperfect ones being discarded, and are made into bundles of from 8 to 10 pairs.

The glass beads used are imported from Poshan (博山), Shantung province. They are of many different colors, and the market price is 70 cents per 10,000. Imitation ivory beads are made locally, and are quoted at from $1.20 to $2 per 500. Steel beads are imported from Shanghai at $3.50 per 10,000 pieces.

Like other domestic industries, chopstick making in Hangchow is an occupation mostly pursued by an entire family working in one shop, and the number of other workers employed in the industry is only 20. These operatives are mostly from Shaohsing, and are paid a monthly wage or by piece-work. Such workers receive $8 per month, with board and lodging, or are paid according to the following scale:—

Nature of Work	Cents.	Daily Output	Daily Wages Cents.
Stripping green bark from bamboo	4 per 200 pairs	1,000 pairs	20
Branding	5 per 200 pairs	2,600 pairs	65
Fixing beads	2 per 200 pairs	2,600 pairs	26

Hangchow chopsticks are of many kinds and the price varies widely according to quality and length. According to recent quotations, the price of chopsticks 7½ inches long ranges from 50 cents for a bundle of 8 pairs to $1 for

36 bundles; chopsticks of 7 inches from 40 cents per bundle to $1 for 50 bundles; and chopsticks 6½ inches long, from 30 cents per bundle to $1 for 56 bundles.

In addition to local consumption and sales to visitors as souvenirs large quantities are shipped to Nanking, Tientsin, Peiping, Hankow, Shantung, and the Straits Settlements. The turnover for the year is $60,000.

SCISSORS

Over 30 scissors makers are operating in Hangchow, chief among them being the famous Chang Hsiao Ch'uan (張小泉). Scissors are the principal product of these establishments, but other kinds of cutlery, such as kitchen knives, razors, and saw blades, are also made. The scissors made by Chang Hsiao Ch'uan have gained such nation-wide fame that more than one-third of the scissors makers in Hangchow bear this name or names with similar pronunciation, but only the Chang Hsiao Ch'uan Chin Chi (張小泉近記), is genuine. This factory was established over 300 years ago by Chang Hsiao-ch'uan, who was a famous cutlery maker toward the end of the Ming Dynasty (1368-1644 A.D.). For the purpose of distinguishing its products from spurious imitations manufactured by numerous shops, the present owner adopts the two characters "Ch'uan Chin" (泉 近) as his trade-mark. Capitalized at $10,000, this concern is the largest maker of scissors in Hangchow. Besides the main store, which is located at Ta Tsing Hsiang (大井巷), it also maintains a branch store in the Hangchow National Products Exhibition Building (杭州國貨陳列館).

Most of the scissors makers in Hangchow are located at Ta Ching Hsiang and all of them are sole proprietorships. The total capital invested in the industry is estimated at $40,000, ranging from $200 to $6,000 for each concern. A total of about 100 men are employed, the number of workers varying from three to 15 in each shop, paid either by the month or at piece-rates. A skilled hand earns $12 a month, while an ordinary operative receives $8, the total wages paid being about $12,000 a year.

The scissor makers in Hangchow still keep up the time-honored practice of having their workshops, known as *tsien lu* (剪 爐), built behind the shops. They are not equipped with plant for forging blanks, which are obtained from local blacksmiths. The manufacturing process, though far from being complex, involves a great deal of time and labor. The blanks are first planed and polished until they are smooth, and twisted into shape. After the edges have been sharpened on a grindstone the two blades are riveted together. Sometimes scissors are etched, plated with nickel, or otherwise decorated.

In addition to making scissors, some of shops also manufacture various kinds of cutlery mostly kitchen knives. These are made at the blacksmith shops and sold at scissors stores. There are at present 17 of these blacksmiths in the city, their total capital amounting to $5,100, ranging from $100 to $500. They are all sole ownership concerns, and the total turnover amounts to $34,000 a year.

The method of making kitchen knives is crude and simple, manual labor being employed entirely. A piece of wrought iron weighing 2 or 3 catties is first hammered into the crude shape after being made red hot. Then the cutting edge is inlaid with a piece of steel about one *liang* in weight, after which the knife is put through a finishing process, which consists of filing, polishing, whetting and handle fixing, before being ready for sale. The finished product, which is branded with the name and address of its maker, is usually sold at from 40 cents to $1 each in Hangchow.

Wrought iron is sold at $6 per picul and steel bars at $18 per picul. The employees number 85 in all work from sunrise to sunset. The work unit is known as *lu* (爐), cousisting of 8 knife blades. A skilled workman is able to finish 3 *lu* in a day. Journeyman receives from $6 to $12 a month, and the total wages paid amount to $15,200 a year.

There are eight workshops engaged in nickel-plating mostly as part of the scissors-making shops. The total capital in this industry amounts to $10,000, ranging from

$500 to $2,000 each, and the aggregate number of workers employed is 50, receiving from $4 to $16 per month.

No less than 200 different kinds of scissors are sold in Hangchow, Chinese and foreign style scissors, and prices range from 24 to 48 cents a pair. The total yearly production is about 65,000 pairs, and the annual turnover over $100,000, of which Chang Hsiao Chuan Chin Chi has the lion's share, varying from $30,000 to $40,000 a year.

CHINESE WRITING-BRUSHES.

Eleven shops in Hangchow are engaged in making Chinese writing-brushes. Their capital varies from $2,000 to $4,000, and their annual business turnover amounts to $80,000. Nearly every shops deals also in Chinese inks, which are chiefly imported from Anhui Province. But Hangchow is not a manufacturing center for writing-brushes, which are shipped from Wuhsing, a district which has enjoyed nation-wide fame for many centuries for its brushes.

The center of the industry is at Shan Lien Ts'un (善 璉 村), a market town about 18 *li* north-east of Hsinshih (新 市). The town is of little importance except for brush making, which was started there many centuries ago. Being purely a cottage industry, brush-making is pursued by nearly every inhabitant of the town, both male and female, either as a regular profession or a slack season occupation. Over 100 households in the town are engaged in making writing-brushes, and the annual output is valued at several hundred thousand dollars.

The "nib" of a Chinese writing-brush is made of hair obtained from a variety of animals including the skunk, goat, rabbit, and rat, goat hair being most commonly used, obtained from stock-breeders at Hsiashih and Ch'angan. Hair from all parts of the body is used but the best is that growing under the chin, where the hair is long, fine, and soft and is most suitable for making high grade brushes. Rabbit hair, known as *tzuhao* (紫 毫) or "purple" hair, is

obtained from wild rabbits in the hills near Wuhsing and is more stiff than goat hair. Brushes made of this variety are most suitable for writing small characters. Skunk hair is imported from Shantung or obtained locally, but only hair from the legs and tail is used, and being very stiff only suitable for making brushes for writing very small characters. Rat hair or, to be more exact, rat whiskers, and chicken feathers, being very soft, are used in making brushes for artists and calligraphers, hence the limited demand.

Hair imported by the brush-makers of Wuhsing is sold at a wide range of prices, and even for one kind prices vary greatly. Goat hair, for instance, is sorted into 15 grades and sold at from 80 cents to $15 a catty. The varieties are known as *ch'ang kuang feng* (長光鋒), *tuan kuang feng* (短光鋒), *ch'ang t'ou chien* (長頭尖), *tuan t'ou chien* (短頭尖), *ting chien* (頂尖), *kan chien* (干尖), *chu shih feng* (粗什鋒), *hsi shih feng* (細什鋒), *chua feng* (爪鋒), *shang chua feng* (上爪鋒), *t'ou chua feng* (透爪鋒), *chiao chuia feng* (脚爪鋒), *pai huang chien* (白黃尖), *ts'u huang chien* (次黃尖) and *chu yang mao* (粗羊毛). Rabbit hair is sorted into eight grades: *tzu hao* (紫毫), *pai hao* (白毫), *ju hao* (乳毫), *huang hua* (黃花), *sse hua* (四花), *wu hua* (五花), *lu hua* (六花) and *chi hua* (七花), and are sold by the *liang* (兩 equivalent to 39.97 grammes), also at a wide range of prices. Each of the foregoing varieties is distinguished by the varying length, lustre, fineness and color of the hair. Brushes made of hair of the best quality not only enable the writer to improve the appearance of the characters written but also stand hard service and have a great water-resisting quality.

As the degree of softness or stiffness of a brush varies according to the kind of hair used, the brush makers of Wuhsing, in order to meet the varied demand of their customers, turn out a variety known as *chien hao* (兼毫) or "mixed hair" brush from a mixture of both stiff and soft hair. The most popular make is the *tsu yang hao*

(紫羊毫), a mixture of goat and skunk hair. Another variety is the *chi lang hao* (雞狼毫), made of chicken feathers and skunk hair, and though not so popular as the *tsu yang hao*, is extensively used. The third and least popular variety, known as *tsu lang hao* (紫狼毫), is made of rabbit and skunk hair. Each of the above-mentioned varieties is subdivided according to the proportion of each kind of hair used, but generally "mixed hair" brushes are used for writing small characters only.

The process of making writing-brushes is by no means simple. The hair is first washed in clean water and then sterilized in a lime solution to prevent rotting or mildew. After being macerated in this solution for about 24 hours, the long and unbroken hair is picked out, tied into tufts, and dried in the sun. After drying, the hair is combed in water with a long-toothed bone comb to remove useless portions which have escaped the first sorting. The hair is then trimmed with a sharp knife to a uniform length, and after further combing is handed over to the *pi chuang* (筆莊) or wholesale makers at Wuhsing to be made into brushes.

The workers in the *pi chuang*, on receiving the hair tufts, make them into the form of a brush by using the shorter hair as the "heart" and the longer hair for the outer layers. Both "heart" and outer layers are made into the form of a tapering cone by shaping with the hand. When a sharp-pointed brush is completed, the bigger end is tied with fine string, which must be carefully done otherwise the hair will drop out after a short period of use. The brush is then coated with a layer of gum prepared from seaweed to keep the hairs together as tightly as possible, and is then ready for mounting, which is done by inserting the bigger end into a slender bamboo holder cut to the desired length. The end of the bamboo is coated on the inside with lacquer or heated resin as an adhesive. The brush is next passed on to the carvers to have characters inscribed on the holders indicating the brand and name of the maker. On highly decorated brushes quotations from the classics or well-known poems are inscribed, and

the inscribed portions are sometimes painted with colored lacquer to make the characters more prominent and attractive. After this finishing touch, the brushes are tied in bundles for the market.

Bamboo is the material generally used in making the handle of a brush, though ivory and red wood are sometimes used for the more expensive kinds. The bamboo used by Wuhsing brushmakers is imported from Yühang in bundles of 750 canes each. Out of each cane, which measures from eight to twelve feet in length, about half a dozen holders can be made. In addition to the holder a hollow bamboo tube, about one-third the length of the holder, is made from another variety of bamboo, and is intended to protect the sharp but delicate point of the brush, but this bamboo tube is often discarded by the user, who, in order to give the brush better protection, prefers a brass or copper tube.

The brushes produced at Wuhsing are classified into many varieties, based on the kind of hair used, and also according to size. There are over 200 kinds of brushes sold on the Wuhsing market, and the following list shows some of the most popular varieties, together with prices, and the number of grades into which they are classified:—

Variety.	Number of Grades.	Price Per Brush.
Tsu hao ..... (紫 毫)	30	$0.11—$4.12
Yang hao .... (羊 毫)	50	0.14— 6.76
Tsu yang hao .. (紫羊毫)	6	0.34— 0.68
Ch'u hsü pi ... (鼠鬚筆)	4	0.60— 1.40
Chien hao .... (箋 毫)	25	0.42— 0.28
Lang hao ..... (狼 毫)	6	0.28— 1.30
Pien ngeh pi .. (圓額筆)	2	1.50— 1.80
Lien pi ..... (聯 筆)	6	0.46— 1.20
P'ing pi ..... (屏 筆)	3	3.00— 5.00
T'iao fu pi .... (條幅筆)	10	1.60— 4.20
Chi mao pi .... (雞毛筆)	6	0.40— 2.00
Tou t'i pi ..... (斗提筆)	20	0.70— 5.00
Chua pi ..... (抓 筆)	30	0.90—32.00
Tui pi ..... (對 筆)	10	0.10— 0.50

The hands employed by brush-making establishments in Wuhsing are divided into several groups, each specializing in one branch of the work. There are hair sorters, hair trimmers, and holder-makers, both sorters and holder makers being paid at piece-rates. The sorters are mostly children, women, and aged persons, doing the washing, sorting, combing and hair-fastening for an average daily wage of from 20 to 30 cents. The holder-makers receive about the same, and holder-carvers get about 20 cents for carving 100 characters. Hair-trimming requires skill and experience, and these workers earn from $10 to $40 a month. All are provided with board and lodging.

Of the 100 odd brush-makers at Wuhsing the Hsu Fu T'ien (徐福田) is the largest concern, employing about 60 hands, and its products are seen on the market of every province in the country.

Over 200 workers are employed by the brush-dealers in Hangchow, their work being confined to the final shaping of the brushes, for which they receive from $10 to $24 a month. Chinese inks are largely Anhui products, but Hangchow brush-makers also make their own, the annual production amounting to 100,000 pieces, valued at $40,000.

"WOODEN FISH" GONGS.

The so-called "wooden fish" gong, known in Chinese as *mu yü* (木魚), is used by Buddhist monks in their devotions, and Hangchow was formerly well-known as a manufacturing center. During the prosperous days of the industry over 40 shops were engaged in this business, but the number has now dwindled to six, with the Yü T'ung Yuan (余同元), T'ung Hsing (同興), and Wu Cheng Hsin (吳正興), the most important. The total capital of all six concerns is only $1,300, ranging from $50 to $500 each.

There kinds of wood are used in making "wooden fish," from the camphor tree, tallow tree, and mulberry. Camphor-wood is shipped from Linp'ing at $1.60 per 100 catties, tallow-tree wood also comes from Linp'ing at $1.50 per 100 catties, and mulberry wood, a local product, costs $2 per 100 catties.

The process of making wooden fish" is very simple, consisting first of making the body and then carving decorative designs thereon. The gongs vary in size from an inch to five feet in diameter, and are known under several names, according to the designs carved on the gong, such as the *hui lung* (迴 龍), *shuang lung* (雙 龍), *tsun t'ou* (寸 頭), *yen yü* (烟 魚), and *ao yü* (鰲 魚). The smallest sell at 2 cents, and the largest cost over $30. The total business in a year amounts to about $10,000.

RATTANWARE.

The rattan industry in Hangchow is not a large business. There are about 30 shops in the city, of which 10 are engaged in cane-splitting and the other 20 in braiding. The total capital of the former amounts to $4,400, employing about 40 workers, each receiving about 30 cents a day while the braiding shops have an aggregate capital of $5,880, and their annual business turnover is $10,000. The number of workers employed is 70, mostly recruited from Shanghai and receiving from $2 to $10 a month, with board and lodging.

Cane is imported from the Straits Settlements, costing from $45 to $60 a picul. Thin bamboos are also used, shipped from Yühang at $2 a bundle of over 50 sticks.

BOOK EIGHT

FINANCIAL INSTITUTIONS

CHAPTER I

BANKING

THE NATIONAL Commercial Bank was the first modern styled bank in Chekiang, established in 1906, by the Chekiang Railway Company (浙江鐵路公司), with an authorised capital of $1,000,000 and $500,000 paid up. The head office was in Hangchow. The Bank secured the right to issue circulating notes at the time of opening. After the Revolution, the Chekiang Railway Company was taken over by the Government, and the shares of the bank held by the Company were sold to private interests. In 1914, the head office was moved to Shanghai, with the office in Hangchow as a branch. The Branch of the Ningpo Commercial Bank (四明銀行) was established in Hangchow in 1911, and that of the Bank of China, in 1913. Since the establishment of these three banks, the banking business began to develop steadily. The following table shows the growth of banking business in Chekiang Province.

MODERN BANKS ESTABLISHED IN CHEKIANG

	Number of Bank Established
1906-1911	2
1912-1916	10
1917-1921	7
1922-1926	7
1927-1933	27
Unknown	6
Total	59

CLASSES OF BANKS

Banks may be classed into six main categories as described in the following paragraphs.

Central Bank.—The Central Bank of China has a branch in Hangchow and a sub-branch in Shaohsing.

Foreign Exchange Bank.—The Bank of China branches in Chekiang are the only representative of this kind of bank in the Province.

Special Chartered Industrial Bank.—This class is represented by the Bank of Communications branches in the Province. This bank was converted into a special industrial bank in 1928 by Government, with the following functions: (1) to act as agent for underwriting and payments of interest on industrial loan bonds, (2) to act as treasury for communication organizations, (3) to take charge of measures for the development of industries, and (4) to act as national treasury, and (5) to issue notes. The head office is in Shanghai.

Commercial Banks.—Most of the banks in Chekiang are commercial banks, whose scope of business includes loans and deposits, foreign and domestic exchanges, and sometime savings deposits are also received. All the leading commercial banks are branches with head office in other cities.

Agricultural and Industrial Banks.—The main purpose of this class of banks is to advance loans and invest in agriculture, land development, and industries. This class is represented by the Agricultural and Industrial Bank Branch in Hangchow, and the many local agricultural banks.

Trade Banks.—Examples of this class of banks are the Kiangsu-Chekiang Bank for Pawnshops and the Salt Industrial Bank.

There are twenty-one banks with head office in the Province, and 38 with head office outside Chekiang.

DISTRIBUTION

Hangchow, the provincial capital of Chekiang, has 18 banks, about 6 or 7 branches in Ningpo and Shaohsing. The following table shows the distribution of banks in the Chekiang Province.

DISTRIBUTION OF MODERN BANKS IN CHEKIANG

	Head Offices	Branch Offices	Aggregate Capital
Hangchow	5	11	$2,083,000
Haining	1	—	100,000
Chiahsing	2	1	581,000
Haiyen	2	—	60,000
Wuhsing	—	2	——
Tehch'ing	1	—	5,000
Ninghsien	—	7	——
Tinghai	—	4	——
Shaohsing	2	4	150,000
Ch'enghsien	3	—	309,600
Linhai	—	2	——
Chinhua	—	1	——
Lanch'i	—	2	——
Ch'uhsien	1	—	66,000
Lungyu	1	—	100,000
Yungchia	1	2	100,000
P'ingyang	1	1	10,000
Yüyao	1	1	20,000
Total	21	38	$3,594,600

CAPITAL

As most of the banks have their head office outside of the Province, the total capital cannot be estimated with any accuracy, except for the 21 banks whose head office is in the Province, which amounts to only $3,594,600. Much larger amount of fund is commanded by the branch banks whose head offices are in Shanghai and other cities. With Shanghai so closely bound to Hangchow, funds can be readily transferred in time of need.

SCOPE OF BUSINESS

Agent for National Treasury.—This function is exclusively performed by the Central Bank of China and Bank

of China. The Central Bank of China does not receive deposits from individuals and does not advance commercial loans.

Note-Issue.—Banks with the privilege of issuing notes are the Central Bank of China, the Bank of China, the Bank of Communications, the National Commercial Bank, the China and South Sea Bank, and the Agricultural and Industrial Bank of China.

Deposits.—Received by all commercial banks.

Loans.—There is a tendency of advancing loans to native industries during recent years, whereas the banks paid more of their attention to advances to commercial firms. Most of the loans are made against securities, and credit loans are very uncommon.

Rural Credit.—The Agricultural and Industrial Bank of China branch in Hangchow specialises in advancing credits to rural borrowers. The total of rural credits extended by this bank during 1932 was over $280,000. This amount was extended to cooperative societies in various hsien, through which the farmers obtained loans. Besides this bank, there are many hsien banks whose sole function is to advance money to farmers.

Exchanges and Discounts.—These are handled by commercial banks.

Savings Deposits.—Banks in Chekiang receiving savings include the Chekiang Provincial Bank, Chekiang Commercial and Savings Bank, Industrial Bank of Chekiang, National Commercial Bank, Bank of Communications, Agricultural and Industrial Bank, Continental Bank, Yen Yeh Bank, the China and South Sea Bank, Industrial Bank of China, and the Chekiang Pawnshop Bank.

Warehousing.—Banks in Chekiang having their own godowns are the Bank of China, National Commercial Bank, Industrial Bank of China and the Chekiang Provincial Bank.

LIST OF MODERN BANKS IN CHEKIANG

Hangchow

		Established	Paid-up Capital	Reserves	Deposits	Profit
Central Bank of China	Branch	1928	$20,000,000	——	——	——
Bank of China	Branch	1913	34,711,700	$2,803,268	$462,656,367	$2,837,427
Bank of Communication	Branch	1908	$8,715,575	6,625,462	186,725,261	769,803
Savings Dept.			500,000	11,121		
Chekiang Provincial Bank	Hand Office	1923	1,000,000	56,445	3,542,378	132,580
Savings Dept.			100,000	24,751		
Continental Bank	Branch	1919	3,578,600	1,733,039	62,697,351	458,695
Savings Dept.			600,000	69,255		
China and South Sea Bank	Branch	1921	7,500,000	1,400,000	78,625,896	1,176,565
Savings Dept.			200,000	100,000		
Hui Tung Bank	Head Office	1921	134,900	5,600	449,835	815,771

		Established	Paid-up Capital	Reserves	Deposits	Profit
National Commercial Bank	Branch	1906	$4,000,000	$2,129,820	$75,628,975	$9,477,934
Savings Dept.			200,000	400,000		
Tao I Bank	Branch	1919	453,500	——	——	——
Chekiang Chufeng Bank	Head Office	1918	190,300	15,053	651,136	4,067
Savings Dept.			50,000			
Agricultural and Industrial Bank	Branch	1930	2,190,000	476,445	13,985,377	269,614
Savings Dept.			400,000			
Industrial Bank of China	Branch	1931	3,507,400	871,833	45,899,229	276,214
Savings Dept.			600,000	85,306		
Chekiang Pawnshops Bank	Head Office	1922	257,800	17,072	927,609	49
Savings Dept.			100,000	1,098		
Yen Yeh Bank	Branch	1915	7,500,000	4,980,711	69,631,654	801,304
Savings Dept.			2,000,000	8,149		
Chekiang Commercial & Savings Bank	Hand Office	1921	250,000	43,692	1,939,519	46,484
Savings Dept.			100,000	30,215		

2. Banks in other *hsien*

Ningpo:

Bank of China, Branch
Bank of Communicaions, Branch
Ningpo Commercial Bank, Branch
Commercial Bank of China, Branch
Industrial Bank of China, Branch
Bank of Amoy, Branch
Land Bank of China, Branch

Haining:

Farmers' Bank of Haining Hsien, Head Office

Chiahsing:

Bank of China, Sub-branch
Chiahsing Commercial and Savings Bank, Head Office, established 1922, capital $500,000.
Chiahsing Hsien Farmers' Bank, Head office, established 1932, capital $81,000.

Haiyen:

Agricultural and Industrial Bank, branch.
Farmers' Credit Society of Haiyen Hsien, head office.

Wuhsing:

Chekiang Local Bank, branch
Bank of China, branch

Tehts'ing:

Farmers' Credit Society of Tehtsinghsien

Tinghai:

Bank of China, branch
Bank of Communications, branch
Commercial Bank of China, branch
Agricultural & industrial Bank, branch

Shaohsing:

Bank of China, branch
Bank of Communications, branch
Chekiang Local Bank, branch
Chekiang Agricultural & Industrial Bank, head office established 1922, capital $100,000.
Farmers' Bank, head office, established in 1932, capital $50,000.
Central Bank of China, Sub-branch

Chenghsien:

Chenghsien Agricultural and Industrial Bank, head office, established 1924, capital $106,900.

Cheng Hsin Local Bank (嵊新地方銀行) established 1932, capital $102,700.

Cheng Hsin Commercial Bank (嵊新商業銀行), established 1931, capital $100,000.

Linhai:

Bank of China, branch

Chekiang Local Bank, branch

Chinhua:

Bank of China, sub-branch

Lanch'i:

Bank of China, branch

Chekiang Provincial Bank, branch

Chühsien:

Chühsien Farmers' Bank, established 1929, capital $66,000

Lungyu:

Lungyu Local Bank, established 1930, capital $110,000.

Yungchia:

Bank of China, branch

Ouhai Industrial Bank (甌海實業銀行), established 1923, capital $100,000

Chekiang Provincal Bank, branch.

Juian:

Farmers' Credit Society

Pingyang:

Bank of China, sub-branch

Farmers' Credit Society

Yüyao:

Bank of China, branch

Cheng Hua Finance Co. (正華銀公司), established 1930, capital $20,000.

CHAPTER II

NATIVE BANKS

NATIVE banking business is most developed in Hangchow, Ningpo, Shaohsing and Yungchia. Hangchow, the capital of the Province, is the exporting centre of Chekiang products as well as the products of Anhui and Kiangsi, and the importing centre of foreign goods. It is therefore the financial centre not only of Chekiang, but even of places in the Fukien and Kiangsi provinces. Ningpo, the chief port in the southeast, which handled even more voluminous foreign trade than Shanghai in the early days, is still very important commercially, with imports and exports amounting to over $30,000,000. This large amount of trade is chiefly financed by native banks.

There are at present 632 native banks in the Province, with total declared capital of over 8.5 million dollars, not including supplementary capital, which often amounts to equal or more than the declared capital, and reserves. The aggregate volume of business of these banks is about $53,000,000 a year, and this amount is a conservative estimate as information for some of the banks are not available.

DISTRIBUTION

Of the 632 native banks, 115 are in Ninghsien, 65 in Hangchow Municipality, 46 in Shaohsing, 41 in Yungchia, and the rest scattering all over the Province. The following table shows the distribution of native banks in Chekiang Province.

DISTRIBUTION OF NATIVE BANKS IN CHEKIANG

	Number	Total Declared Capital	Business
Hangchow Municipality	65	$ 865,700	$8,174,000* 8,741,000†
Hanghsien	6	42,600	——
Haining	15	219,000	3,140,000
Fuyang	2	20,000	130,000
Yühang	4	35,600	175,000
Linan	—	——	——
Hsinteng	1	4,000	30,000

	Number	Total Declared Capital	Business
Chiahsing	8	$ 82,000	$3,500,000
Chiashan	12	89,000	2,100,000
Haiyen	6	60,000	330,000
P'inghu	14	73,000	1,220,000
T'unghsiang	2	15,000	40,000
Wuhsing	9	176,000	1,220,000†
Ch'anghsing	1	20,000	750,000
Ninghsien	115	3,587,600	——
Tsuch'i	11	52,400	66,400
Fenghua	27	47,700	1,128,000
Chenhai	11	107,500	1,028,000
Tinhai	32	125,000	1,340,000
Hsiangshan	6	61,600	175,000
Shaohsing	46	380,000	——
		736,000‡	1,980,000
Hsiaoshan	3	19,000	——
Yüyao	23	345,600	3,096,000
Shangyu	1	36,000	42,000
Ch'enghsien	4	9,500	159,000†
Hsinch'ang	7	13,600	143,000
Linhai	11	154,500	1,064,000
Huangyen	30	88,200	——
Wenling	10	85,000	510,000
Chinhua	8	86,000	880,000
Lanch'i	14	154,400	——
Iwu	5	66,500	563,000
Ch'ühsien	17	112,000	2,390,000
Lungyu	3	22,000	550,000
Kiangshan	1	3,000	10,000
Ch'angshan	3	16,000	50,000
K'aihua	3	50,000	600,000
Yungchia	41	652,600	2,750,000
		25,000‡	
Juian	—	60,000	1,435,000
Yühuan	4	43,500	960,000
Lots'ing	2	13,000	80,000
P'ingyang	4	78,000	1,250,000
Lishui	4	85,000	190,000
Ts'ingt'ien	7	49,500	200,000
Sungyang	6	113,000	150,000
Shuich'ang	4	71,000	126,000
Lungch'uan	6	21,800	404,000
Yunho	2	11,000	30,000
Hsuanp'ing	1	10,000	15,000
Total	632	$8,567,400	$53,157,400

*Deposits; †Loans; ‡Sup.

CAPITALISATION AND BUSINESS

Our investigation reveals that the total declared capital of the native banks in Chekiang is over eight and half million dollars, and the highest amount hardly reaches $200,000 while the capital of smaller banks is as small as a few thousand dollars. The most common amount is around $10,000, as shown in the following table.

CAPITAL OF NATIVE BANKS

Capital	Number of banks
$1,000 and under	27
1,001–5,000	209
5,001–10,000	198
10,000–20,000	91
20,000–30,000	56
30,000–40,000	21
40,000–50,000	1
50,000–60,000	11
60,000–70,000	11
70,000–80,000	3
80,000–90,000	—
90,000–100,000	2
100,000–150,000	2
Total	632

It should be pointed out here that the above figures do not include what is called "supplementary capital", which is really deposits of shareholders or partners for a very long period, or even not subject to withdrawal but only bears interests. This fund can be used by the bank without worrying of its possible withdrawal. The supplementary capital of a bank is sometimes several times that of the declared capital, thus enabling it to do business which seems to be out of proportion to the capital. Declared capital is therefore does not represent the true financial strength of the banks.

Of the 632 banks, only information could be obtained from 436 banks concerning the volume of business, which was about $5,357,400. The average amount of business done by each bank is about $100,000, with the largest amounting to one million and smallest to ten thousand dollars. The

largest amount of business is done by banks in Ningpo, as the biggest number of native banks are found there.

CLASSES OF NATIVE BANKS

Native banks in Chekiang are classed into three groups according the amount of business handled, namely, the *ta t'ung hang* (大同行), or the bigger banks, the *hsiao t'ung hang* (小同行), or the smaller banks, and the money exchange shops.

Ta t'ung hang.—Native banks of this group are those which have bigger capital and more extensive scope of business. In Hangchow, the larger banks are known as the *hui hua t'ung hang* (匯劃同行) which include banks among whom a mutual clearing system is maintained and accounts can be intertransferred. The main business of these banks is making loans to merchants and transfers to and from other localities. Seventeen of the native banks in Hangchow are of this group, representing over half a million dollars capital, and receiving about 5.5 million dollars of deposits and advancing 5.7 million dollars of loans.

In Ningpo, native banks with capital over $60,000 and being a member of the "Ningpo transfer system" are classed as *ta t'ung hang*. Among these banks direct transfers may be made, and banks who are not members of the system can make transfers through them.

Hsiao t'ung hang.—These banks also make advances, but in addition, they also do money exchanging business. Banks with capital under $60,000 are of this group.

Money Exchanges.—These are small money shops making their profit from money exchanging on the counters, and are not members of the Native Banks Guild.

ORGANIZATION

The organization of native banks varies slightly, but that of Hangchow and Ningpo can be representative.

A native bank in Hangchow is headed by a general manager, assisted by one or two assistant managers. For some banks there may be one supervisory manager, whose

function is to supervise the general working of the firms and to participate in deciding important business issues. Under the general manager are two main classes of employees, those whose duties are outside the bank, such as canvassing for deposits and loans, selling currencies, attending the clearing every day at the guild, and participating the firm conferences, etc., and those who take charge of the internal working of the bank. Of the latter group, there are the accountants, treasurers, ushers, secretaries, etc. the greater number of this group constituting the business department. The accountant and his associates keep records, prepare statements and reports, calculate interest payable and receivable, etc. The treasurer keeps custody of currencies, specie and bills of every kinds. The ushers receive customers at the counters and take care of miscellaneous business. The secretaries take charge of all secretarial work and prepare letters and telegraphs of transfers.

In Ningpo, the organization is somewhat similar, different only in names. There are two nominal high officers, the *t'ai shang huang* (太上皇), who is retired manager and has rendered valuable service to the bank, and the *san chien* (三肩), usually one of the founders of the firm or the relative of the larger partners. The general manager and assistant mangers are called the *ching shou* and *fu shou* (經手, 副手) respectively, who are the real executives of the firm. The *ch'ang t'ou* (長頭), is an important department of the bank taking charge of domestic exchange business. The organisation of other departments is similar to the Hangchow native banks.

SCOPE OF BUSINESS

The scope of business of the *ta t'ung hang* or the bigger size banks is very much wider than the *hsiao t'ung hang*, or the smaller banks, with their chief business emphasising on loans and advances, transfers, deposits, with customers not only of the locality of the bank but outside cities. The following is a description of the business of the bigger size banks.

Deposits.—Deposits forms the main sources of the banks' working funds. Deposits may be classed into three kinds. (1) Current deposits, drawable by checks or on presentating passbooks. Depositors of this kind sometimes are entitled to overdraw on his account provided proper guarantee is furnished. Interest on deposits is about 1 or half per cent lower than the native rate prevailing. (2) Fixed deposits for a few months to one or several years, as agreed on the time of opening the account. Rate of interest varies. (3) Deposits by other banks, usually for the purpose of clearing and bearing interest at current native rate.

Loans.—Loans and advances are of four kinds as follows:

(1). Current Loans are advances callable at short notice. Interest charged is calculated on the unit of one dollar and the rate is in thousandths. The rate is agreed by the daily gathering of the *ta t'ung hang*, and the minimum is 2 per mille and maximum 7.5 per mille per day. At the rate of 2 per mille, the monthly interest will be 60 cents per $100, which equal to 7.2 per cent per annum. At the maximum rate, the annual interest is equal to 27 per cent. In Ningpo, interest rate on the short term loans is 12.5 cents plus the prevailing native rate per thousand dollars per day. Toward the end of the year, when money market is usually tight, a special kind of loans is advanced after the 20th day of the 12th month and repayable between the 20th and the 30th day of the first month in the following year, and a much higher rate of interest is charged.

(2). Long Term Loans are generally advanced for a term of 3 or 6 months, and sometimes as long as one year. The general practice, however, is for six months. In Hangchow, long terms loans are made during the months of April to October, and in Ningpo, in the months of March and September. The rate of interest is fixed by the meeting of the *ta t'ung hang* banks in April and October every year.

(3). Advances to banks are made for the purpose of accomodating fellow banks in time of need. Interest are chargeable on a daily basis, at a maximum rate of 6 cents per $1,000 per day. Money is sometimes lent to other banks

without interest when the lending bank is in a very easy position, usually at the beginning of the year.

(4). Over drafts are a form of loan to those who have an account with the bank, and terms are agreed before any drawal is made exceeding the balance of their account.

Domestic Exchange.—Remittance business is handled almost exclusively by the *ta t'ung hang* banks, and money is only remittable to places within China. Transfers may be made in one of the three ways, by a draft, by letter and by telegraph. Advances are sometimes made against documentary bills.

THE NINGPO TRANSFER SYSTEM

The system of settling accounts by making transfers through native banks originated almost a 100 years ago at the time of the Taiping uprising when the market was frightfully short of circulating media. To economise the use of cash, this system was devised. A merchant wishing to avail themselves of the transfer service obtain a special passbook from his bank for entries of either collection or payments. When the merchant wants to pay a sum to merchant B, he presents his passbook to his bank and has his account debited the amount, instructing the bank to pay the same to the bank which carries account with the merchant B. In the case of collection, the process is just reverse. At about two or three o'clock every day each bank sends men to the other banks of the transfer system for clearing and proper entries.

Another transfer book issued by the bank to its clients is that on which entries are made in symbols. The process differs slightly with that mentioned in the preceeding paragraph. When merchant A wishes to transfer $1,000 to merchant B., arrangement is made beforehand between the two parties. Merchant B. then goes to A's bank, informing them of the transfer, and requesting them to credit the account of B's bank with A's, and debit the account of merchant A. of the same amount. B's account is not credited until the afternoon of the following day, after clearing between the two banks is effected.

Transfers between Ningpo and other places can also be effected through mails. The service is very extensively used by merchants for collecting and remitting money from and to other localities. Native orders can be used in effecting a transfer to other localities, but must be accompanied by a letter of the transferring bank.

Transfers can only be made by the *ta t'ung hang* native banks, and the smaller banks wishing to make transfers must do it through the *ta t'ung hang*. The amount to be transferred is not limited, but a minimum of $1 in ordinary business days and of $5 in the month of account settlement is fixed.

LIST OF NATIVE BANKS IN CHEKIANG

Hangchow Municipality

(1). *Ta t'ung hang*:

Name		Capital	Volume of Business Deposits	Loans
Yuan T'ai	(元 泰)	$30,000	$440,000	$430,000
Chieh K'ang	(介 康)	16,000	300,000	300,000
An Fu	(安 孚)	12,000	150,000	163,000
T'ung T'ai	(同泰昌記)	30,000	280,000	310,000
T'ai Sheng	(泰生源記)	30,000	430,000	430,000
I Yuan	(益 源)	36,000	365,000	300,000
Wei K'ang	(惟 康)	36,000	158,000	174,000
Lun Yuan	(綸 源)	30,000	450,000	450,000
Yin Yuan	(寅 源)	36,000	300,000	356,000
Tsung Yuan	(崇源裕記)	36,000	350,000	386,000
K'ai T'ai	(開泰源記)	30,000	470,000	500,000
I Ch'ang	(義昌源記)	30,000	350,000	350,000
Chü Yuan	(聚 源)	36,000	500,000	530,000
Teh Ch'ang	(德 昌)	30,000	170,000	192,000
Teh K'ang	(德康申記)	30,000	420,000	420,000
Teh Sheng	(德 昇)	30,000	202,000	236,000
I Feng	(億 豐)	30,000	150,000	180,000

(2). *Hsiao tung hang*:

Name		Capital	Volume of Business	
			Deposits	Loans
Shun Ch'ang	(順昌)	$10,000	$150,000	$300,000
Ch'eng Ch'ang	(成昌)	12,000	144,000	144,000
Yuan Ch'ang	(源昌)	10,000	150,000	150,000
Jui Ho	(瑞和)	5,000	40,000	40,000
Jui K'ang	(瑞康)	10,000	90,000	100,000
I Yuan	(義源)	20,000	150,000	160,000
Heng Chiu	(衡九)	10,000	150,000	150,000
Huan Ho	(寰和)	10,000	120,000	135,000
Ch'ien Yü	(謙豫源記)	10,000	140,000	150,000
Yung Yü	(永裕)	10,000	100,000	100,000
T'ung Chi	(同吉)	8,000	99,000	110,000
T'ung Ch'ang	(同昌)	12,000	100,000	100,000
T'ung I	(同益)	5,000	41,000	45,000
I Ch'ang	(亦昌)	12,000	120,000	130,000
Ch'eng K'ang	(成康)	10,000	200,000	200,000
Hung T'ai	(宏泰)	5,000	50,000	50,000
Heng Sheng	(恆盛)	10,000	100,000	100,000
Ying Feng	(盈豐)	10,000	200,000	200,000
I Ch'ang	(益昌)	6,000	160,000	160,000
Sheng T'ai	(昇泰)	5,000	150,000	150,000
T'ung Teh	(同德)	12,000	115,000	130,000
T'ai Lai	(泰發)	10,000	139,000	140,000
Shen K'ang	(慎康)	10,000	90,000	90,000

(3). *Money Exchanging Native Banks.*

Name			Capital
T'ung Sheng	(同盛)	.....	$ 5,000
Heng Ta Ch'ang ..	(恆大昌)	.....	10,000
Heng Yü	(恆裕)	.....	4,000
Yen Yuan	(衍源)	.....	5,000
T'ai K'ang	(泰康)	.....	5,000
Fu T'ai	(復泰)	.....	4,000
Wan Yuan	(萬源)	.....	10,000
Fu Yuan	(福源)	.....	2,000
Shui Yuan	(瑞源)	.....	5,000
Hua Chi	(華記)	.....	1,000
T'ung Sheng	(同昇)	.....	16,000
Ch'un Yü	(春源)	.....	2,000
Yuan T'ai	(元泰)	.....	2,000
Chao T'ai	(兆泰)	.....	2,000
Heng Fu	(恆孚)	.....	10,000
Heng Jun	(恆潤)	.....	1,000
T'ai An	(泰安)	.....	4,000
Chih Feng	(致豐)	.....	5,000
Wan Ho	(萬和)	.....	1,200

Name		Capital
Ch'eng I	(誠益)	$4,000
Hung Yuan	(鴻源)	2,000
I Sheng	(怡昇)	500
Chen Yuan	(震源)	2,000
Yu Chi	(友記)	2,000
Hui T'ung	(惠通)	1,000

NINGHSIEN

(1). *Ta t'ung hang*

Name		Date Established		Capital
Yuan Ch'un	(元春)	1929	.....	$110,000
Yuan I	(元益)	1922	.....	60,000
Yuan Heng	(元享)	1912	.....	33,000
Yuan Ta	(元大)	1926	.....	33,000
Heng Fu	(恆孚)	1917	.....	120,000
Heng Sheng	(恆生)	1925	.....	100,000
Wu Yuan	(五源)	1932	.....	60,000
Ting Heng	(鼎恆)	1919	.....	33,000
Jui Yü	(瑞餘)	1927	.....	30,000
Jui K'ang	(瑞康)	——	.....	120,000
Jui Feng	(瑞豐)	1925	.....	66,000
Shen Feng	(慎豐)	1926	.....	66,000
Shen K'ang	(慎康)	1919	.....	60,000
Jui Fu	(瑞孚)	1932	.....	66,000
T'ai Yuan	(泰源)	1918	.....	66,000
T'ai Han	(泰涵)	1923	.....	49,500
T'ai Sheng	(泰生)	1926	.....	72,000
I K'ang	(益康)	——	.....	65,000
Yü Yuan	(裕源)	1913	.....	33,000
T'ung Shen	(同慎)	1925	.....	66,000
Pao Shen	(保愼)	1928	.....	110,000
Chü K'ang	(鉅康)	1926	.....	66,000
Ching Yuan	(景源)	1907	.....	55,000
Yen Yuan	(妍源)	1919	.....	33,000
Hui Yuan	(彙源)	1917	.....	55,000
Yung Yuan	(永源)	1922	.....	60,000
Yuan Yü	(元餘)	1933	.....	100,000
Hsin Yuan	(信源)	1926	.....	72,000
I T'ai	(鎰泰)	1917	.....	60,000
Chen T'ai	(鎮泰)	1927	.....	60,000
Tun Yü	(敦裕)	1880	.....	60,000
Yü Feng	(餘豐)	1928	.....	66,000
Fu Heng	(復恆)	1927	.....	66,000
Chin Heng	(晉恆)	1911	.....	30,000
T'ien I	(天益)	1924	.....	66,000
Ta Yaun	(大源)	1930	.....	72,000
I Sheng	(鎰生)	1925	.....	60,000

(2). *Hsiao tung hang*

Name	Date Established	Capital
Yuan Yuan ..... (源 源)	1919	$22,000
Yuan Chi ..... (源 吉)	1926	44,000
Yuan Ch'eng ..... (元 成)	1926	26,400
Yuan Li ..... (元 利)	1899	5,000
Heng Mao ..... (恒 茂)	1917	30,000
Heng Ta ..... (恒 大)	1898	30,000
Heng Yü ..... (恒 裕)	1912	22,000
Heng Hsiang ..... (恒 祥)	1923	20,000
Heng K'ang ..... (恒 康)	1921	40,000
Heng Ch'un ..... (恒 春)	1919	17,600
Jui Yuan ..... (瑞 源)	1922	33,000
Pao Hsing ..... (寶 興)	1927	33,000
Pao Yuan ..... (寶 源)	1928	24,000
Shen I ..... (愼 益)	1927	22,000
Shen Ch'ang ..... (愼 昌)	1925	20,000
Shen Yu ..... (愼 餘)	1910	11,000
T'ai Sun ..... (泰 巽)	1927	22,000
T'ung Yuan ..... (通 源)	1914	10,000
T'ung T'ai ..... (同 泰)	1928	33,000
Pao Ho ..... (保 和)	1921	22,000
Wei K'ang ..... (惟 康)	1926	22,000
Fu Li ..... (福 利)	1929	30,000
Ch'eng Yuan ..... (承 源)	1922	22,000
An T'ai ..... (安 泰)	1928	22,000
Yü T'ai ..... (豫 泰)	1929	33,000
Jen Ho ..... (仁 和)	1927	33,000
Feng Ho ..... (豐 和)	1811	54,000
Hui Yü ..... (惠 餘)	1927	22,000
Ts'ui T'ai ..... (萃 泰)	1930	44,000
Feng Yü ..... (豐 源)	1915	66,000
Yuan Ch'ang ..... (源 長)	1925	5,000
Heng Lung ..... (恒 隆)	1929	3,000
Tsu Feng ..... (資 豐)	1921	2,000
Tsu K'ang ..... (資 康)	1927	20,000
Pao K'ang ..... (寶 康)	1927	11,000
Ch'un Yü ..... (春 榆)	1928	3,000
Chen Yuan ..... (振 源)	1932	10,000
Shen Ta ..... (愼 大)	1915	12,000

Name	Date Established	Capital
Shen Chi ..... (愼 記)	1926	$22,000
Yü K'ang ..... (裕 康)	1913	2,000
Hsing Yuan ..... (興 源)	1921	10,000
T'ung Yuan ..... (同 源)	1929	3,000
T'ung Ch'un ..... (同 春)	1912	6,000
T'ung Sheng ..... (同 升)	1923	6,000
Hsiang K'ang ..... (祥 康)	1925	5,000
Ch'ien K'ang ..... (乾 康)	1913	6,000
Fu K'ang ..... (福 康)	1914	6,000
Fu Yuan ..... (福 源)	1928	20,000
Teh Yuan ..... (德 源)	1914	8,000
Teh K'ang ..... (德 康)	1932	8,000
Hsin Fu ..... (信 孚)	1930	5,000
Mao Ho ..... (懋 和)	——	3,000
Chih Ho ..... (志 和)	1928	11,000
Hung Yü ..... (鴻 餘)	1926	11,000
Ch'eng Chi ..... (成 記)	1931	6,000
Yuan Feng ..... (源 豐)	1916	8,000
Fu T'ai ..... (復 泰)	1932	10,000
Hsieh Yuan ..... (協 元)	1928	10,000
Hui Ta ..... (惠 大)	1911	2,000
Ch'un Mao ..... (椿 茂)	1912	3,000
Tao Sheng ..... (道 生)	1927	5,500
T'ing Sun ..... (廷 蓀)	1924	10,000
Ho Chi ..... (和 濟)	1925	10,000
Chü Yuan ..... (聚 源)	1930	10,000
Hou K'ang ..... (厚 康)	1932	1,000
Wan Yuan ..... (萬 源)	1928	6,000
Yuan T'ai ..... (源 泰)	1928	1,000
Yung Ta ..... (永 大)	1913	5,500
Jen K'ang ..... (仁 康)	1928	12,000
Ch'eng Ho ..... (承 和)	1931	11,000
Chun Ch'ang ..... (均 昌)	1929	5,500
Heng Li ..... (恆 利)	1930	10,000
Yuan Ch'ang ..... (元 昌)	1931	10,000
T'ung Ch'ang ..... (同 昌)	1918	6,000
Shen Sheng ..... (愼 生)	1925	2,000
Yuan Li ..... (源 利)	1921	600
T'ung Fu ..... (同 孚)	1918	5,000
Pao T'ai ..... (寶 泰)	1931	5,000

SHAOHSING

Name	Date Established	Capital	Annual Turnover
I Feng ..... (怡豐)	——	$10,000 30,000*	$500,000
Ch'eng Yuan ..... (承源)	——	10,000 30,000*	600,000
K'ai Yuan ..... (開源)	1926	12,000 28,000*	600,000
Ch'ien T'ai ..... (乾泰)	——	20,000 20,000*	400,000
Pao Ching T'ai .... (鮑景泰)	1927	10,000 30,000*	400,000
T'ung Chi ..... (同吉)	1927	18,000 22,000*	500,000
Chin Yuan ..... (晉源)	1927	10,000 30,000*	300,000
Hui Yuan ..... (匯源)	1930	16,000 24,000*	400,000
Ch'u Ch'eng ..... (儲成)	1913	10,000 30,000*	400,000
Yuan Ch'ang ..... (元昌)	1929	10,000 30,000*	400,000
T'ung Chi ..... (同濟)	1932	10,000 30,000*	300,000
Sheng Yuan ..... (蛙源)	——	10,000 30,000*	300,000
T'ai Yuan ..... (廣源)	1928	10,000 30,000*	300,000
Hsiang Ho ..... (祥和)	1932	10,000 30,000*	300,000
I T'ai ..... (怡泰)	1925	10,000 20,000*	300,000
Ch'ien Ch'ang ..... (乾昌)	——	10,000 30,000*	300,000
T'ung Ho ..... (同和)	1928	18,000 12,000*	300,000
Heng Sheng ..... (恆升)	1927	10,000 20,000*	400,000
Fu Yü ..... (復裕)	——	10,000 30,000*	300,000
Yu Yuan ..... (裕源)	1919	10,000 30,000*	500,000
Heng Yuan ..... (恆隆)	1924	10,000 10,000*	300,000
Hsin Fu ..... (信孚)	1931	8,000 12,000*	300,000
Yü Ho ..... (裕和)	——	8,000 12,000*	200,000

*Supplementary capital.

Name	Date Established	Capital	Annual Turnover
I Ch'ang ..... (宜 昌)	1928	$10,000 10,000*	$200,000
Heng Ho ..... (恒 和)	1921	8,000 12,000*	200,000
Hung Yuan ..... (鴻 源)	1923	4,000 6,000*	200,000
Mao Yuan ..... (茂 源)	1929	5,000 5,000*	200,000
I Ch'ang ..... (怡 昌)	1928	4,000 6,000*	100,000
Heng Yuan ..... (恒 源)	1925	4,000 6,000*	80,000
Heng Yü ..... (恒 豫)	1930	4,000 6,000*	100,000
I Yuan ..... (怡 源)	1931	4,000 6,000*	100,000
Heng T'ai ..... (恒 泰)	1932	4,000 6,000*	100,000
K'uai Sheng ..... (快 昇)	1931	8,000 7,000*	100,000
Hsien Heng ..... (咸 亨)	1916	4,000 6,000*	100.000
Ch'u Ho ..... (儲 和)	1924	1,000 4,000*	70.000
Yuan Sheng ..... (元 升)	1926	1,000 4,000*	70.000
T'ai K'ang ..... (泰 康)	1931	4,000 6,000*	100,000
Yuan Shun ..... (源 順)	1928	2,000 3,000*	60,000
Ta Yuan ..... (達 源)	1931	8,000 12,000*	200,000
Chen Yuan ..... (振 源)	1931	8,000 12,000*	200,000
Fu Yuan ..... (馥 源)	1931	6,000 10,000*	200,000
Ying Yuan ..... (盛 源)	1931	8,000 12,000*	200,000
Sheng K'ang ..... (生 康)	1930	4,000 6,000*	100,000
Chü T'ai ..... (鉅 泰)	1932	8,000 12,000*	200,000
Yuan K'ang ..... (元 康)	1928	4,000 6,000*	100,000
T'ung Yü ..... (同 裕)	1928	5,000 5,000*	100,000

*Supplementary capital.

YUNGCHIA

Name		Date Established	Capital	Annual Turnover
Hou K'ang	(厚康)	1899	$2,200	$1,000,000
Han K'ang	(滬康)	1908	4,400	1,500,000
Yuan K'ang	(元康)	1912	5,000	500,000
I K'ang	(益康)	1912	5,000	700,000
Pao K'ang	(寶康)	1916	10,000	400,000
Shun K'ang	(順康)	1924	4,000	300,000
Shen K'ang	(愼康)	1927	20,000	400,000
Jun Yuan	(潤源)	1921	22,000	1,500,000
Hui Yuan	(滙源)	1926	21,000	700,000
T'ai Yuan	(泰源)	1918	10,000	400,000
Chü T'ai	(聚泰)	1930	23,000	400,000
Yuan Fou	(源浮)	1924	30,000	500,000
Teh Sheng	(德生)	1900	3,000	300,000
Hung Sheng	(宏生)	1923	4,000	200,000
Lien Ch'ang	(濂昌)	1926	20,000	700,000
Han Ch'ang	(滬昌)	1926	25,000	1,200,000
T'ai Ch'ang	(泰昌)	1927	24,000	500,000
Ch'ang Yü	(昌裕)	1930	20,000	600,000
Hui Sheng	(匯勝)	1926	13,000	400,000
T'ung Hua	(統華)	1914	6,000	400,000
Fu Yuan	(福源)	1929	24,000	500,000
Ting Yuan	(鼎源)	1916	17,600	1,000,000
Chiu Yuan	(久源)	1929	20,000	500,000
Chü Yuan	(聚源)	1928	22,000	500,000
Jun Yü	(潤餘)	1913	23,000	600,000
Hung Yuan	(洪元)	1916	10,000	1,000,000
Heng Feng	(恆豐)	1914	1,450	600,000
Ch'eng Feng	(誠豐)	1930	20,000	400,000
Ting T'ai	(鼎泰)	1925	20,000	900,000
Ts'ung T'ai	(崇泰)	1926	30,000	400,000
Hui Chin	(匯錦)	1923	13,000	600,000
Jun I	(潤益)	1926	22,000	1,000,000
Wen K'ang	(溫康)	1924	20,000	700,000
Ta Sheng	(大升)	1896	5,000	100,000
Ting Feng	(鼎豐)	1922	4,000	300,000
Yung Feng	(永豐)	1926	22,000	1,000,000
Sheng Yuan	(勝源)	1925	22,000	500,000

Name		Date Established	Capital	Annual Turnover
Chin T'ai	(錦 泰)	1920	$11,900	$500,000
Wu Feng	(五 豐)	1929	20,000	3,000,000
Chao Feng	(兆 豐)	1931	20,000	400,000
Hsien Fu	(咸 孚)	1929	20,000	500,000

TINGHAI

Name		Date Established	Capital	Annual Turnover
Yuan Feng	(元 豐)	1921	$5,000	$70,000
Chien Yü	(建 裕)	1920	4,000	50,000
Ta Lai	(大 賚)	1923	3,500	40,000
Ch'uan Hsing	(泉 興)	1925	3,000	35,000
Yü Shun	(餘 順)	1927	3,000	36,000
Ho Yuan	(和 源)	1928	3,000	32,000
Yen T'ai	(昕 泰)	1926	3,200	40,000
Pao Shun	(寶 順)	1923	3,000	40,000
Hsieh Ch'ang	(協 昌)	1927	3,000	26,000
Sheng T'ai	(甦 泰)	1931	2,500	30,000
Chi T'ai	(吉 泰)	1931	3,500	36,000
Pao T'ai	(寶 泰)	1932	4,000	38,000
I T'ai	(益 泰)	1931	3,000	23,000
Yuan T'ai	(源 泰)	1932	3,000	17,000
Yuan Ta	(源 大)	1931	3,000	20,000
Shun Ho	(順 和)	1932	3,000	20,000
T'ai Sheng	(泰 生)	1912	6,000	70,000
Chih Ta	(質 大)	1915	5,000	60,000
Fu T'ai	(福 泰)	1918	5,000	50,000
T'ai Heng	(泰 恆)	1921	5,000	43,000
Pao Yuan	(寶 源)	1919	4,500	40,000
Heng T'ai	(恆 泰)	1925	3,000	35,000
T'ai Fu	(泰 孚)	1920	3,500	30,000
T'ung Teh	(同 德)	1918	3,000	30,000
Sheng Hao	(升 號)	1925	4,000	35,000
Yü Ch'ing T'ai	(餘慶泰)	1927	4,000	37,000
Heng I	(恆 益)	1917	5,000	70,000
I T'ai	(怡 泰)	1918	5,000	72,000
Ho Sheng	(和 生)	1922	4,800	50,000
Fu Jen	(輔 仁)	1925	5,000	53,000
I Sheng	(義 生)	1921	4,500	52,000
Yung Sheng	(永 生)	1926	5,000	60,000

HUANGYEN

Name		Date Established	Capital	Annual Turnover
Kung Yü	(公 裕)	1928	$8,000	$40,000
I T'ung	(一 通)	1931	6,000	40,000
Ho Chung	(合 衆)	1931	7,000	36,000
Ta Ching	(大 經)	1930	6,400	40,000
Yü K'ang	(裕 康)	1931	6,000	40,000
Yü Ch'ang	(裕 昌)	1931	7,000	20,000
Ho Sheng	(合 生)	1930	5,000	30,000
Shen Yü	(愼 餘)	1930	6,00	40,000
I Feng	(益 豐)	1918	7,000	35,000
Ts'ui T'ung	(萃 通)	1929	7,500	40,000
Yü Yuan	(裕 源)	1931	3,000	32,000
T'ai Chi	(泰 記)	1931	2,500	——
I Li	(益 利)	1930	1,000	——
Yung T'ung	(永 通)	1932	1,600	——
Ho Li	(合 利)	1932	1,000	——
T'ung Feng	(同 豐)	1931	1,000	——
Ho T'ung	(合 通)	1932	500	——
Ho Ch'ang	(合 昌)	1931	2,000	——
Ta Yuan	(大 源)	1931	1,000	——
Ta Yuan	(達 遠)	1932	1,000	——
Ta T'ung	(大 通)	1930	4,000	——
Heng Yuan	(亨 源)	1931	4,000	——
Ho Sheng	(合 勝)	1929	12,000	——
Chiu Feng	(久 豐)	1930	2,500	——
Yung K'ang	(永 康)	1931	5,000	——
I Ch'ang	(怡 昌)	1929	10,000	——
Ho Shen	(合 愼)	1930	4,200	——
Fu Ta	(孚 達)	1930	4,000	——
Ta Yu	(大 有)	1930	5,000	——
I Sheng	(怡 生)	1931	3,000	——

FENGHUA

Name		Date Established	Capital	Annual Turnover
Chu Yuan	(鉅 源)	1913	$2,000	$50,000
Hsien T'ai	(咸 泰)	1876	3,000	60,000
Yung Yuan	(永 源)	1889	3,000	60,000
Yung Ho	(永 和)	1913	3,000	60,000
Yung Ch'ang	(永 昌)	1925	3,000	65,000
Feng Yuan	(豐 源)	1906	1,000	40,000
Hui Yuan	(滙 源)	1904	1,000	40,000
Yuan I	(元 益)	1915	1,000	35,000
Chih K'ang	(志 康)	1913	2,000	30,000
Heng K'ang	(恒 康)	1892	1,000	25,000
Sheng K'ang	(生 康)	1908	2,000	50,000

Name		Date Established	Capital	Annual Turnover
I K'ang	(怡 康)	1923	$2,000	$40,000
Nung Kung	(農 工)	1915	3,000	60,000
T'ung Sheng	(通 生)	1929	1,000	30,000
Li Ch'eng	(立 成)	1929	3,000	68,000
Sheng K'ang	(升 康)	1912	2,000	30,000
Wu K'ang	(五 康)	1915	1,000	20,000
Hui Ch'eng	(惠 成)	1911	1,500	30,000
Fou Ch'eng	(阜 成)	1930	1,400	30,000
Yun Ho	(尤 和)	1918	1,500	30,000
T'ai Sheng	(泰 陞)	1923	1,300	40,000
T'ai Hsiang	(泰 祥)	1918	1,000	20,000
Heng Yü	(恆 餘)	1921	2,000	40,000
Yung Heng	(永 恆)	1917	1,000	20,000
Yuan Hsiang	(元 祥)	1916	1,500	30,000
Sheng Heng	(升 恆)	1919	1,000	20,000
Yuan K'ang	(源 康)	1917	1,500	30,000

YUYAO

Name		Date Established	Capital	Annual Turnover
Heng Chi	(衡 濟)	1914	$10,000	$130,000
Hui Yuan	(會 源)	1918	12,000	280,000
Yü Sheng	(裕 盛)	1894	10,000	130,000
Sheng Yuan	(升 元)	1919	9,600	135,000
Yuan Ch'eng	(原 成)	1921	10,000	100,000
Chiu Ta	(久 大)	1926	10,000	70,000
I Ta	(怡 大)	1926	10,000	120,000
I Ta	(裔 大)	1927	10,000	80,000
Yuan Ta	(源 大)	1928	10,000	79,000
Hsin Ta	(信 大)	1928	10,000	84,000
Sheng Ta	(升 大)	1876	10,000	300,000
Ho Yuan	(合 元)	1884	10,000	280,000
Hou Heng	(厚 亨)	1899	8,000	200,000
Ch'uan Yuan	(全 元)	1904	10,000	200,000
Heng Ho	(恆 和)	1914	5,000	130,000
Chi Yuan	(吉 元)	1904	9,600	140,000
Hui Ch'ang	(會 昌)	1932	11,000	200,000
Tsu Feng	(資 豐)	1909	6,000	120,000
Ch'eng Hsiang	(成 祥)	1919	8,000	100,000
Ming Chi	(明 記)	1912	5,000	105,000
Hui T'ung	(惠 通)	1931	10,000	64,000
Chih Ta	(志 大)	1931	10,000	54,000
Ta Lai	(大 來)	1933	10,000	——

CH'UHSIEN

Name		Date Established	Capital	Annual Turnover
Yü Ch'eng	(裕 成)	1931	$4,000	$120,000
Ch'eng Ch'ang	(成 昌)	1930	9,000	140,000
Hua Ch'ang	(華 昌)	1913	5,000	130,000
Heng Feng	(恒 豐)	1932	6,000	130,000
Chü Yuan	(鉅 源)	1931	10,000	140,000
Chü Ch'eng	(聚 成)	——	10,000	150,000
Ts'ui Ho	(萃 和)	1920	10,000	150,000
Chung Ho	(中 和)	——	12,000	150,000
Ch'ing Ta	(慶 大)	——	4,000	130,000
Heng Teh	(恒 德)	1919	4,000	130,000
Fu T'ai	(福 泰)	1932	4,000	120,000
Chü K'ang	(鉅 康)	1924	5,000	130,000
Chen Ta	(震 大)	——	4,000	130,000
Chun T'ai	(鈞 泰)	1919	20,000	180,000
Heng Sheng	(恒 升)	——	7,000	140,000
Chin Sheng	(晉 升)	1914	12,000	200,000
Shui Sheng	(瑞 生)	1931	4,000	120,000

LANCH'I

Name		Capital
Shui Mao	(瑞 茂)	$12,000
Jui Heng	(瑞 亨)	12,000
Pao T'ai	(寶 泰)	11,000
Yuan Heng	(源 亨)	12,000
Yü T'ai	(豫 泰)	12,000
Yü T'ung Yuan	(裕通源)	11,000
Ch'ang Yuan	(長 源)	12,000
Wan Heng	(萬 亨)	10,000
T'ung Heng Yuan	(同亨元)	8,000
I Yuan	(義 源)	10,000
Hung Yü	(鴻 裕)	10,000
Chu Heng	(聚 亨)	9,600
T'ai Heng	(泰 亨)	12,800
I Ho	(義 和)	12,000

HAINING

Name		Date Established	Capital	Annual Turnover
Yü Ch'ang	(裕 長)	——	——	$20,000
Ta Lai	(大 來)	1931	$10,000	10,000
Yü Lung	(裕 隆)	1932	10,000	10,000
Fu Lai	(復 來)	1930	10,000	10,000
Ta Sheng	(大 生)	1917	5,000	30,000

Name	Date Established	Capital	Annual Turnover
Yü Ch'ang ..... (裕 長)	1916	$ 5,000	$ 30,000
Hsin K'ang ..... (信 康)	1930	5,000	30,000
Yü T'ung ..... (裕 通)	1929	25,000	400,000
Li Ta ..... (立 大)	1929	25,000	400,000
Ta Wei ..... (大 威)	1917	25,000	400,000
Pao Ta ..... (保 大)	1914	25,000	440,000
Ch'eng Lung ..... (正 隆)	1920	25,000	400,000
Ta Yu ..... (大 有)	1923	25,000	400,000
Ta Hsin ..... (大 新)	1929	12,000	300,000
Yung Ch'eng ..... (永 成)	1930	12,000	300,000

P'INGHU

Name	Date Established	Capital	Annual Turnover
Heng Sheng ..... (恆 升)	1909	$6,000	$100,000
Chih Ta ..... (志 大)	1911	5,000	100,000
Chih Ch'eng ..... (志 成)	1914	5,000	100,000
Yung Ho Sheng ... (永和生)	1917	5,000	100,000
Shen Yü ..... (愼 餘)	1921	5,000	100,000
T'ung Yü ..... (同裕賽記)	1923	6,000	100,000
T'ung Yü ..... (同裕增記)	1923	6,000	100,000
Hsin Sheng ..... (新 盛)	1924	5,000	100,000
T'ung Sheng ..... (同 盛)	1925	5,000	50,000
Teh Shun ..... (德 順)	1924	5,000	100,000
Ta Ch'eng ..... (大 成)	1926	5,000	100,000
K'ang Ta ..... (康 大)	1921	5,000	70,000
Hsieh K'ang ..... (協 康)	1928	5,000	40,000
Yung Feng ..... (永 豐)	1931	5,000	60,000

CHIASHAN

Name	Date Established	Capital	Annual Turnover
T'ung Yü Keng .... (同裕賽)	1923	——	$200,000
An Chiu ..... (安 久)	1914	$9,000	250,000
An Ch'ang ..... (安 昶)	1922	10,000	200,000
Yung Fu ..... (永 孚)	1921	10,000	200,000
I Ho ..... (怡 和)	1904	9,000	300,000
Ta Ch'ang ..... (達 昌)	1924	8,000	100,000
Heng Ch'ang ..... (恆 昌)	1928	9,000	100,000
Ho T'ai ..... (和 泰)	1928	6,000	150,000
P'ing Yuan ..... (平 源)	1929	6,000	150,000
Ho K'ang ..... (和 康)	1929	6,000	150,000
Heng Yuan ..... (恆 源)	1930	6,000	150,000
Yü Chi..... (裕 吉)	1914	10,000	150,000

CH'ANGHSING

Name		Date Established	Capital	Annual Turnover
An Yü	(安 豫)	1890	$24,000	$500,000
Chiu Fu	(久 孚)	1921	24,000	100,000
Teh Fu	(德 孚)	1915	24,000	100,000
Teh Yü	(德 豫)	1928	10,000	560,000
Hsin Ch'eng	(信成申記)	1891	10,000	560,000
Hsin Ta	(信 大)	1930	20,000	100,000
Shen I	(慎 益)	1928	20,000	100,000
Teh Yuan	(德 源)	1910	24,000	100,000
Ch'ing Yü	(慶 餘)	1914	20,000	100,000
Tao Sheng	(道 生)	1921	20,000	100,000

TS'UCH'I

Name		Date Established	Capital	Annual Turnover
T'ai Feng	(泰 豐)	1915	$5,000	$12,000
Han Yuan	(涵 源)	1916	5,000	10,000
Feng Yuan	(豐 源)	1927	5,000	9,000
Hung Yuan	(鴻 元)	1926	5,000	6,000
Jui Ta	(瑞 大)	1927	6,000	5,000
Ting Yuan	(鼎 元)	1932	5,000	7,000
Ch'in Ta	(勤 大)	1932	5,000	5,000
Shen Yü	(慎 裕)	1928	3,000	5,000
Ch'uan Yü	(泉 餘)	1906	5,600	5,300
Ch'eng Yuan	(承 源)	1914	4,800	4,000
Pao Yuan T'ai	(包源泰)	1891	3,000	3,100

CHENHAI

Name		Date Established	Capital	Annual Turnover
Shen Hsiang	(慎 祥)	1904	$13,000	$100,000
Yuan Lung	(元 隆)	1924	13,000	110,000
Jui Shen	(瑞 琛)	1902	12,000	100,000
Hung Fu	(宏 孚)	1932	14,000	120,000
Fu K'ang	(福 康)	1925	11,000	110,000
T'ung Yü	(同 豫)	1895	12,000	90,000
Ch'eng Fu	(承 孚)	1927	10,000	100,000
Shen Fu	(慎 孚)	1926	6,000	80,000
Hsiang Yü	(祥 裕)	1928	6,000	86,000
T'ung Yuan	(通 源)	1896	5,500	72,000
Hsin Fu	(孚 信)	1932	5,000	60,000

LINHAI

Name		Date Established	Capital	Annual Turnover
Wu Feng	(五豐)	1930	$22,000	$200,000
Yung Feng	(永豐)	1924	20,000	200,000
Shen Feng	(慎豐)	1931	12,000	100,000
Heng Yuan	(衡遠)	1929	28,000	100,000
Tsu Feng	(滋豐)	1930	20,000	100,000
Ch'ien T'ai	(謙泰)	1931	10,000	100,000
Fu Ch'ang	(福昌)	1931	4,000	150,000
I Yuan	(益源)	1931	6,000	45,000
Shen Lung	(慎隆)	1930	12,000	80,000
Chin Feng	(晉豐)	1929	18,000	90,000
Kung Li	(公利)	1932	2,500	4,000

WENLING

Name		Date Established	Capital	Annual Turnover
I Ta	(怡大)	1930	$20,000	$100,000
Sheng K'ang	(勝康)	1932	10,000	50,000
Ch'ang Ch'un	(長春)	1932	10,000	50,000
Li Sheng	(利生)	1931	3,000	20,000
Chü Hsin	(聚新)	1932	7,000	40,000
Hsiang K'ang	(祥康)	1930	5,000	30,000
Heng Ch'ang	(恆昌)	1930	10,000	100,000
Chao Feng	(兆豐)	1931	10,000	50,000
Ho Feng	(合豐)	1931	5,000	40,000
Ho Li	(合利)	1931	5,000	30,000

CHIAHSING

Name		Date Established	Capital	Annual Turnover
Cheng Hsing	(正興)	1927	$10,000	$300,000
I Sheng	(義盛)	1928	10,000	400,000
Yung T'ai	(永泰)	1924	10,000	400,000
Tsu Yuan	(滋源)	1906	10,000	60,000
Ta Heng	(大亨)	1929	10,000	40,000
I K'ang	(義康)	1923	12,000	50,000
Heng Yuan	(衡源)	1930	10,000	60,000
Chü Yuan	(聚源)	1932	10,000	300,000

HANGHSIEN

Name		Capital
K'ai T'ai	(開泰)	$ 9,600
Ch'ing Yuan	(慶源)	10,000
Teh Fu	(德孚)	5,000
Heng Ch'ang	(恆昌)	6,000
Chi Ch'eng	(集成)	2,000
Hsieh Ch'ang	(協昌)	10,000

HAIYEN

Name		Date Established	Capital	Annual Turnover
Heng Hsing	(衡興)	——	$10,000	——
Hsiang Ho	(祥和)	——	10,000	——
Chiu Feng	(久豐)	1930	10,000	$80,000
Heng Hsing Sheng .	(恆興生莊)	1925	10,000	80,000
Chin Feng	(晉豐)	1930	10,000	50,000
Chin T'ung	(晉通)	1924	10,000	120,000

JUIAN

Name		Date Established	Capital	Annual Turnover
Lien I	(聯益)	1928	$12,500	$345,000
Ch'ang T'ai	(長泰)	1932	12,000	160,000
Yung Yuan	(永元)	1931	10,000	300,000
Sheng K'ang	(勝康)	1929	6,000	160,000
I T'ai	(益泰)	1922	5,000	100,000
Yung Sheng	(永勝)	1933	5,000	60,000
T'ung I	(同益)	1932	3,000	160,000
Yü Ch'eng	(裕成)	—	1,000	50,000
Yung Yü	(永裕)	1933	3,000	50,000
Yü Yuan	(裕源)	1933	2,500	50,000

CHINHUA

Name		Date Established	Capital	Annual Turnover
Chi Yuan	(濟源)	1912	$10,000	$100,000
Yü Yuan	(裕源)	1930	10,000	100,000
Shui Yuan	(瑞源)	——	20,000	200,000
Hui Yuan	(滙源)	1929	16,000	150,000
Shen Yuan	(愼源)	1912	8,000	150,000
Yü Heng Yuan ...	(裕亨源)	1912	16,000	150,000
Chou Heng Mao ...	(周恆茂)	1931	3,000	15,000
Chun Yuan	(俊源)	1931	3,000	15,000

HSINCH'ANG

Name		Date Established	Capital	Annual Turnover
Heng Feng	(恆豐)	1919	$3,600	$30,000
Kun Yuan	(蓀元)	1922	1,000	20,000
Ting Ch'ang	(鼎昌)	1926	500	3,000
Ta Sheng	(大生)	1921	1,000	10,000
Lü Sheng Ta	(呂生大)	1917	3,000	25,000
Pao Ho Sheng	(保和升)	1928	2,500	16,000
Teh Chi	(德記)	1929	2,000	13,000

TS'INGT'IEN

Name		Date Established	Capital	Annual Turnover
Sheng K'ang	(勝 康)	——	$1,500	$10,000
Yuan K'ang	(源 康)	——	33,000	80,000
Yü Yuan	(裕 源)	——	1,300	10,000
Yü K'ang	(裕 康)	——	2,200	10,000
Kuo Pao	(國 寶)	——	1,100	40,000
Ta Ling Fu	(大嶺阜)	——	8,000	40,000
Yu Ta	(有 大)	——	2,400	10,000

SUNGYANG

Name		Date Established	Capital	Annual Turnover
Hsin Ta Li	(信達利)	1928	$33,000	$40,000
Sung Yuan	(松 源)	1929	30,000	40,000
Jen Feng	(王 豐)	1932	10,000	10,000
Chi T'ung Yuan ...	(集通源)	1928	20,000	30,000
Heng Feng	(恆 豐)	1932	10,000	15,000
Lien Sheng	(聯 生)	1932	10,000	15,000

HSIANGSHAN

Name		Date Established	Capital	Annual Turnover
Ch'ien K'ang	(乾 康)	——	$9,600	$40,000
Yuan Sheng	(源 生)	——	12,000	30,000
Shen Chi	(愼 記)	——	10,000	25,000
Yung Feng	(永 豐)	——	10,000	30,000
Ta T'ung	(大 通)	——	15,000	30,000
Chin Heng	(晉 恆)	——	5,000	20,000

LUNGCH'UAN

Name		Date Established	Capital	Reserve Fund	Annual Turnover
Wang T'ung Mao ..	(王同茂)	1930	$2,000	$15,000	$50,000
Hsin K'ang	(信 康)	1926	5,800	40,000	100,000
Hsin Ta Li	(信達利)	1928	6,000	60,000	110,000
Hsin K'ang .....(信康代辦處)		1927	3,000	30,000	56,000
Hsin Ta Li ...(信達利代辦處)		1929	3,000	35,000	58,000
Fu Hou	(福 厚)	1932	2,000	10,000	30,000

CHUCH'I

Name	Date Established	Capital	Annual Turnover
T'ung Ho ..... (同和)	1922	$8,000	$100,000
Heng Sheng ..... (恆昇)	1923	5,000	80,000
Teh Yuan ..... (德源)	1922	3,000	50,000
T'ung T'ai Hsiang . (同泰祥)	1922	5,000	100,000
Wan Sheng ..... (萬盛)	1932	3,000	30,000

IWU

Name		Capital	Reserve Fund	Annual Turnover
Yü Yuan ..... (裕源)	1922	$9,000	$2,000	$140,000
Jui Feng ..... (瑞豐)	1930	19,500	12,000	113,000
Chü Ch'ang ..... (聚昌)	1930	8,000	1,000	80,000
Yü Sheng ..... (裕盛)	1919	20,000	12,000	80,000
Yuan Ch'ang ..... (源昌)	1921	10,000	6,000	150,000

SHUICH'ANG

Name	Date Established	Capital	Annual Turnover
Hsin Ta Li ..... (信達利)	1929	$30,000	$40,000
Li Sheng ..... (利生)	1932	5,000	6,000
Shui Yuan ..... (遂源)	1931	30,000	70,000
Mao Sheng ..... (懋生)	1931	6,000	10,000

P'INGYANG

Name	Date Established	Capital	Annual Turnover
Shen P'ing ..... (申平)	1929	$30,000	$500,000
Hsieh Yuan ..... (協源)	1927	10,000	200,000
Yuan Chin ..... (源發)	1930	18,000	400,000
Jen Feng ..... (壬豐)	1932	20,000	150,000

YUHUAN

Name	Date Established	Capital	Annual Turnover
I Yuan ..... (怡源)	1931	$9,500	$30,000
Yuan Yuan ..... (源源)	1926	12,000	380,000
I K'ang ..... (怡康)	1930	10,000	240,000
Hui T'ung ..... (匯通)	1928	12,000	310,000

LISHUI

Name	Capital	Annual Turnover
Hsin Ta Li ..... (信達利)	$15,000	$40,000
Hsü Teh Sheng ... (許德生)	40,000	40,000
I Ta Li ..... (義達利)	20,000	40,000
Feng Yuan ..... (豐 源)	10,000	50,000

CH'ENGHSIEN

Name	Established	Capital
Wang Chi Feng ... (汪集豐)	1913	$9,000
Ching T'ai Yü .... (景泰裕)	1923	4,000
Kuang Sheng Ying (廣生榮)	1932	3,000
San T'ai ..... (三 泰)	1928	3,500

HSIAOSHAN

Name	Established	Capital
T'ung Yü ..... (同 餘)	1925	$5,000
Sheng Ta Shun ... (生大順)	1930	6,000
Pao Ch'ang ..... (寶 昌)	1931	8,000

LUNGYU

Name	Date Established	Capital	Annual Turnover
Chin Feng ..... (晉 豐)	1905	$9,000	$300,000
Shui Feng ..... (瑞 豐)	1914	8,000	105,000
Chiang I Ta ..... (姜益大)	1984	5,000	100,000

CH'ANGSHAN

Name	Date Established	Capital	Annual Turnover
Jen Yü ..... (仁 裕)	1909	$6,000	$20,000
Yun Chi ..... (允 吉)	1930	4,000	10,000
T'ung Ch'ang ..... (同 昌)	1926	6,000	20,000

K'AIHUA

Name	Date Established	Capital	Annual Turnover
Wan T'ai Yuan ... (萬泰元)	1892	$30,000	$250,000
T'ai Yü ..... (泰 裕)	1930	10,000	250,000
I Lung ..... (義 隆)	1923	10,000	100,000

YUHANG

Name	Date Established	Capital	Annual Turnover
Shen Yü ..... (愼 餘)	1930	$8,000	$30,000
T'ien Yuan ..... (天 源)	1930	10,000	60,000
K'ai Yuan ..... (開源愼記)	1924	8,000	20,000
Yü Yuan ..... (餘 源)	1916	9,600	65,000

FUYANG

Name	Date Established	Capital	Annual Turnover
Yü T'ung ..... (餘 通)	1928	$8,000	$60,000
Ch'ien Yuan ..... (乾 元)	1923	12,000	70,000

LOTS'ING

Name	Date Established	Capital	Annual Turnover
Hui T'ung ..... (滙 通)	——	$7,000	$40,000
Hou Sheng ..... (厚 生)	——	6,000	40,000

YUNHO

Name	Date Established	Capital	Annual Turnover
Hsin Ho ..... (信 和)	1931	$6,000	$20,000
Hsien Fu ..... (咸 孚)	1932	5,000	10,000

T'UNGHSIANG

Name	Date Established	Capital	Annual Turnover
Yuan Ch'ang ..... (源 昌)	1930	$5,000	$20,000
Cheng T'ung ..... (正 通)	1930	10,000	20,000

SHANGYU

Name	Date Established	Capital	Annual Turnover
Hsien K'ang ..... (咸 康)	1921	$36,000	$42,000

KIANGSHAN

Name	Date Established	Capital	Annual Turnover
Ting Feng ..... (鼎 豐)	1909	$3,000	$10,000

HSUANGP'ING

Name	Date Established	Capital	Annual Turnover
Lien Ch'eng ..... (聯 成)	1931	$10,000	$15,000

HSINTENG

Name	Date Established	Capital	Annual Turnover
Heng Yü ..... (恆 裕)	1900	$ 4,000	$30,000

LISHUI

Name	Capital	Annual Turnover
Hsin Ta Li ..... (信達利)	$15,000	$40,000
Hsü Teh Sheng ... (許德生)	40,000	40,000
I Ta Li ..... (義達利)	20,000	40,000
Feng Yuan ..... (豐 源)	10,000	50,000

CH'ENGHSIEN

Name	Established	Capital
Wang Chi Feng ... (汪集豐)	1913	$9,000
Ching T'ai Yü .... (景泰裕)	1923	4,000
Kuang Sheng Ying (廣生榮)	1932	3,000
San T'ai ..... (三 泰)	1928	3,500

HSIAOSHAN

Name	Established	Capital
T'ung Yü ..... (同 餘)	1925	$5,000
Sheng Ta Shun ... (生大順)	1930	6,000
Pao Ch'ang ..... (寶 昌)	1931	8,000

LUNGYU

Name	Date Established	Capital	Annual Turnover
Chin Feng ..... (晉 豐)	1905	$9,000	$300,000
Shui Feng ..... (瑞 豐)	1914	8,000	105,000
Chiang I Ta ..... (姜益大)	1984	5,000	100,000

CH'ANGSHAN

Name	Date Established	Capital	Annual Turnover
Jen Yü ..... (仁 裕)	1909	$6,000	$20,000
Yun Chi ..... (允 吉)	1930	4,000	10,000
T'ung Ch'ang ..... (同 昌)	1926	6,000	20,000

K'AIHUA

Name	Date Established	Capital	Annual Turnover
Wan T'ai Yuan ... (萬泰元)	1892	$30,000	$250,000
T'ai Yü ..... (泰 裕)	1930	10,000	250,000
I Lung ..... (義 隆)	1923	10,000	100,000

YUHANG

Name	Date Established	Capital	Annual Turnover
Shen Yü ..... (慎 餘)	1930	$8,000	$30,000
T'ien Yuan ..... (天 源)	1930	10,000	60,000
K'ai Yuan ..... (開源慎記)	1924	8,000	20,000
Yü Yuan ..... (餘 源)	1916	9,600	65,000

FUYANG

Name	Date Established	Capital	Annual Turnover
Yü T'ung ..... (餘 通)	1928	$8,000	$60,000
Ch'ien Yuan ..... (乾 元)	1923	12,000	70,000

LOTS'ING

Name	Date Established	Capital	Annual Turnover
Hui T'ung ..... (匯 通)	——	$7,000	$40,000
Hou Sheng ..... (厚 生)	——	6,000	40,000

YUNHO

Name	Date Established	Capital	Annual Turnover
Hsin Ho ..... (信 和)	1931	$6,000	$20,000
Hsien Fu ..... (咸 孚)	1932	5,000	10,000

T'UNGHSIANG

Name	Date Established	Capital	Annual Turnover
Yuan Ch'ang ..... (源 昌)	1930	$5,000	$20,000
Cheng T'ung ..... (正 通)	1930	10,000	20,000

SHANGYU

Name	Date Established	Capital	Annual Turnover
Hsien K'ang ..... (咸 康)	1921	$36,000	$42,000

KIANGSHAN

Name	Date Established	Capital	Annual Turnover
Ting Feng ..... (鼎 豐)	1909	$3,000	$10,000

HSUANGP'ING

Name	Date Established	Capital	Annual Turnover
Lien Ch'eng ..... (聯 成)	1931	$10,000	$15,000

HSINTENG

Name	Date Established	Capital	Annual Turnover
Heng Yü ..... (恒 裕)	1900	$ 4,000	$30,000

CHAPTER III

PAWNSHOPS

PAWNSHOPS play a very important part in the economic life of the mass of people, and are found almost everywhere in the country. There are over 300 pawnshops in Chekiang, mostly in Shaohsing, Ninghsien, Huangyen, Hangchow, Yüyao, Haining and Chiahsing. The distribution of pawnshops in the Province, their capital and volume of business is shown in the following table.

DISTRIBUTION OF PAWNSHOPS

	Number	Capital	Annual Volume of Business
Hangchow Municipality	19	$1,074,000	$3,430,000
Hanghsien	8	416,000	1,030,000
Haining	11	900,000	110,000 (for two shops only)
Fuyang	1	——	——
Yühang	3	103,000	180,000
Linan	1	10,000	18,000
Hsinteng	1	24,000	40,000
Chiahsing	13	130,000	——
Chiashan	8	218,000	1,160,000
Haiyen	4	275,000	——
Ts'ungteh	3	——	——
P'inghu	6	239,000	420,000
T'unghsiang	7	243,500	420,000 (for 5 shops only)
Wuhsing	3	——	——
Ch'anghsing	3	170,000	——
Tehts'ing	9	——	——
Anchi	1	28,000	70,000
Ninghsien	25	644,000	——
Tsuch'i	5	146,000	48,000 (interest receipts)
Fenghua	4	89,000	79,000
Chenhai	9	247,000	——
Tinghai	2	——	——
Hsiangshan	1	60,000	120,000
Shaohsing	44	820,000	673,400 (figures of 16 shops only)
		461,000*	

*Supplmentary capital.

	Number	Capital	Annual Volume of Business
Hsiaoshan	12	$ 218,000	$ 454,000
Chuch'i	4	420,000	820,000
Yüyao	16	245,000	2,680,000 (capital for 13 and business for 12 shops only)
Shangyü	5	82,000	121,000 (figure of 3 shops only)
Ch'enghsien	6	——	——
Hsinch'ang	6	64,000	161,000
Linhai	9	——	——
Huangyen	21	70,500	—— (capital of 19 shops only)
Ninghai	2	200,000	100,000 (figure of 1 shops only)
Wenling	10	230,000	850,000
T'ient'ai	4	47,000	50,000
Hsienchü	1	20,000	40,000
Chinhua	3	107,000	254,000
Lanch'i	4	149,000	——
Tungyang	2	30,000	60,000 (figure of one shop only)
Iwu	1	40,000	50,000
Wui	1	20,000	60,000
P'ukiang	2	30,000	141,000
Ch'ühsien	2	272,000	280,000
Ch'angshan	1	——	——
K'aihua	1	40,000	60,000
Chienteh	2	20,000	33,000 (figure of one shop only)
T'unglu	1	——	——
Yungchia	3	72,000	240,000 (figure of two shops only)
Juian	2	30,000	160,000 (figure of one shop only)
Lots'ing	2	12,000	60,000 (figure of 1 shop only)
P'ingyang	1	——	——
Yühuan	1	10,000	25,000
Total	319	——	——

CAPITAL AND BUSINESS

The average capital of pawnshops in Chekiang is small, nearing the neighborhood of between ten and twenty thousand dollars, with the largest over $100,000 and smallest $5,000 These firms have close relationship with banking

circle, and financial assistance is often resorted to from banks. Some of the pawnshops in Ninghsien receive deposits but pay lower interest than the native banks. Shareholders or partners are financially responsible for the firm in time of emergency.

CAPITAL OF PAWNSHOPS

	Number of firms
$10,000 and under	24
10,001–20,000	98
20,001–30,000	57
30,001–40,000	36
40,001–50,000	24
50,001–60,000	8
60,001–70,000	2
70,001–80,000	3
80,001–90,000	8
90,001–100,000	3
100,000 and over	7
Total	270

Business is heaviest in the winter and spring, and slackens in the summer and autumn, the average being $100,000 a year. During the past years pawning business has not been so prosperous in spite of the fact that general economic conditions had been bad which theoretically would increase the amount of pawning.

AMOUNT OF BUSINESS OF PAWNSHOPS

	No. of Shops
$ 10,000– 50,000	49
50,001–100,000	46
100,001–150,000	20
150,001–200,000	25
over 200,000	11
Total	151

ORGANIZATION

The organization of a pawnshop varies in different localities. In Hangchow, the pawnshop business is divided into the Hui group (徽 幫) and the Shaohsing group. In

a pawnshop of the Hui group, the duties of each member of the staff from the manager to the clerks are well defined. Under the manager, there are a few members of the *kui shang* (櫃 上), who appraise and handle the pledges offered by the borrowers at the counter, and their redemption. The *nei ch'ang* (內 場) take charge of the money matters and keep books and prepare reports. The *chung pan* (中 班) have the custody of the pledges received, their packing and storage. Besides these three main departments, there are a few apprentices and storage keepers.

In a Shaohsing type pawnshop the duties of carrying business are jointly the responsibility of the whole staff. This group is the minority of pawnshops in Hangchow.

For a pawnshop in Ninghsien, a manager known as *chung shang* (總 上) heads the whole firm, with two departments under him, the external and internal departmatters and keep books and prepare reports. The *chung* of clerks, namely:—

(1). The appraiser and assistant appraisers, known as *cheng k'an* (正 看) and *fu k'an* (副 看) respectively, who approve the acceptability and appraise the value of the pledge offered and decide the amount to be lent;

(2). The accountant, or the *chang fang* (帳 房), who keeps records of all articles pledged, keeps accounts and books;

(3). The *ch'ü fang* (取 房), who take charge of redemption of articles pledged;

(4). The *p'iao fang* (票 房), who receive borrowers, handing the money and pawn certificate to the borrowers;

(5). The *p'ai fang* (牌 房), who label and number the articles pledged;

(6). The *i fang* (衣 房), who label and number wearing apparels pledged.

For the internal department, there are the *lou t'ou* (樓 頭), *lou erh* (樓 二), and *lou san* (樓 三), *lou t'ou* taking charge the storage of the articles pledged with the

two other to assist him; the *yin fang* (銀 房), the treasurer, usually concurrently held by the *lou t'ou*.

The employees of a pawnshop are paid very small salaries and wages, which are but part of their incomes. A manager gets as little as $15 while the other clerks sometimes less than ten dollars a month. All employees are furnished free boarding and lodging. Besides the regular monthly salaries and wages, there are two other sources of incomes. A storage fee, known as *tsun hsiang* fee (存 箱 費), is paid by the borrower when pledging wearing apparels which are properly packed and stored. The money, about 1 cent from each dollar, goes to the staff. Again, the proceeds from sales of unredeemed articles, after the amount borrowed and interest thereon being deducted, is distributed among all employees. The share to each officer is in proportion to his rank and salaries, and is often many times the regular monthly salaries.

BUSINESS PRACTICES

Business practices followed by pawnshops in the Chekiang are somewhat similar in all parts of the Province. The following paragraphs describe the most general methods applied.

Varieties of pledges.—Articles accepted as pledges for advance may be grouped into two main heads: wearing apparels and jewels, and agricultural products. In offering wearing apparels, an extra fee of 1 cent to every dollar is charged for the storing of the article, payable at the time of redemption. Agricultural products offered for advances are usually rice, wheat, silk, cotton, etc., and advances against this kind of pledges are made at rate of interest and date of redemption mutually agreed beforehand. Farm products pledged are usually of a large quantity, and lower rate of interest is charged on this kind of loans.

Appraisal.—The method of appraising articles offered for financial accomodations is not uniform, and is entirely based on the experienced judgment of the appraiser. Generally articles are appraised according to the value or quantity. Gold, silver, and other metals or metallic instru-

ment, are articles whose value is based on its weight. In Hangchow, gold and things of gold is valued at about 50 to 60 dollars for each *liang*, and silver $1 to $1.20 per *liang*, silk, $25 to $30 per 100 *liang*. For clothings, about 30 per cent is allowed, men's wear is usually of higher value than women's. Silk and cotton piece-goods can be pawned for 60 to 70 per cent of its market value, bedding, about 50, clocks and watches, 30 to 40 per cent. A *tael* of silver is pawned one dollar.

Rate of Interest.—The standard rate of interest is 20 per cent per annum, but actual rate charge varies around this standard, in accordance with local financial conditions, and with approval of local authority. Extra charges as mentioned above must be sanctioned by authority. The prevailing rate of interest in most places is $2 per $100 per month. Interest is chargeable by month, and fraction of a month is considered as a whole month.

Time Limit for Redemption.—The general rule in regard to the limit of time for the borrower to redeem his pledge is 18 months, plus ten days of grace. Failure to redeem within the period subjects the pledged article to be sold to make good the advance made by the pawnshop. For agrictultural products, the time limit of redemption is agreed at the time of pawning.

Exception to the above general practice may be found in a few places. In Hangchow, the grace extended after the expiration of 18 months is one month, making the entire period 19 months. The advance may be renewed at the due date by paying the interest accrued and securing a new pawn ticket by the borrower. In Haiyen, the limit is 20 months, and in some localities the period allowed is as long as 22 to 24 months.

Disposal of Unredeemed Pledges.—Pledged articles can be redeemed anytime within the period upon paying the interest accrued. The title to the article is automatically lost to the borrower after the date of maturity of the loan, and the pawnshop is free to dispose of it in any way they see fit. Unredeemed pledged articles are disposed of either by auction or retailing by store owned by the pawn. Unredeemed wearing apparels can be bought by merchants in advance with special privileges by contracting with the

pawnshop to take over all articles against which the loans fall due but unpaid, within that month. In such cases, the buyers pay only the amount advanced to the original owner plus interest due. In Ninghsien, articles can also be sold in the similar way, but the price is agreed by the buyers' guild in a meeting held each year in the spring.

LIST OF PAWNSHOPS IN CHEKIANG

	Name	Established	Capital	Annual Business
Hangchow Municipality				
Yu Tüng	(裕通)	1867	$50,000	$180,000
Ch'eng Yü	(成裕)	1871	50,000	160,000
Pao Shan	(保善)	1871	60,000	180,000
Hsieh Chi	(協濟)	1884	45,000	170,000
Shan Ch'ing	(善慶)	1884	58,000	240,000
Shan Hsing	(善興)	1884	40,000	220,000
T'ung Chi	(同吉)	1885	77,000	180,000
Chü Ho	(聚和)	1886	48,000	120,000
Yung Chi	(永濟)	1887	35,000	140,000
Yü Hsing	(裕興)	1888	50,000	160,000
T'ung Chi	(同濟)	1891	60,000	900,000
Yü Lung	(裕隆)	1896	50,000	200,000
Hsien K'ang	(成康)	1901	40,000	160,000
T'ung Hsing	(同興)	1909	50,000	210,000
Shou Ch'ang	(壽昌)	1911	120,000	260,000
Wan Feng	(萬豐)	1911	45,000	150,000
Chu Yuan	(聚源)	1914	76,000	180,000
T'ung K'ang	(同康)	1925	70,000	170,000
T'ien Chi	(天濟)	1926	50,000	160,000
Hanghsien				
Kuang Hsing	(廣興)	1867	36,000	70,000
Ch'eng Teh	(承德)	1916	60,000	150,000
Jen T'ai	(仁泰)	——	60,000	160,000
Tun Yuan	(敦源)	1925	60,000	130,000
Shen K'ang	(慎康)	1895	30,000	90,000
Pao Ch'ang	(保昌)	1873	80,000	200,000
Jen K'ang	(仁康)	1920	20,000	50,000
I Ch'ang	(義昌)	1864	70,000	180,000
Haining				
T'ungshun	(同順)	1872	50,000	60,000
Pao Sheng	(保生)	1886	40,000	50,000
Yuan Heng	(元恒)	——	——	——
Chao Feng	(兆豐)	——	——	——

	Name	Established	Capital	Annual Business
Ting Yü	(鼎裕)	——	——	——
Yung K'ang	(永康)	——	——	——
Heng K'ang	(恒康)	——	——	——
Chin Feng	(晉豐)	——	——	——
Feng Ho	(豐和)	——	——	——
Jui Sheng	(和生)	——	——	——
Yü Sheng	(裕生)	——	——	——
Fuyang				
Tung I	(通義)	——	——	——
Yühang				
Tung Ho	(同和)	1876	$50,000 5,000*	$20,000
Ting T'ai	(鼎泰)	1884	48,000	80,000
Fu Hao	(復號)	1877	50,000	80,000
Linan				
Kung Chi	(公濟)	1930	10,000	18,000
Hsinteng				
Jen Ch'ang	(仁昌)	1901	24,000	40,000
Chiahsing				
Ting Feng	(鼎豐)	1909	10,000	——
Ta Ho	(大和)	1882	10,000	——
Jen Ho	(人和)	1888	10,000	——
Hsieh Hsing	(協興)	1909	100,000	——
Ting Yuan	(鼎源)	1871	10,000	——
I Ch'ang	(義昌)	1914	10,000	——
Ta Ch'ang	(大錩)	1915	10,000	——
Mao Sheng Feng	(茂盛豐)	1867	10,000	——
Jen Hsin	(仁信)	1914	10,000	——
Fou K'ang	(阜康)	1899	10,000	——
Ch'uan Hsieh Hsing	(全協興)	1868	10,000	——
Ho Shun	(和順)	1894	10,000	——
T'ung Ho	(同慶)	1889	10,000	——
Chiashan				
Pao Shan	(寶善)	1867	30,000	150,000
K'ang Chi	(匡濟)	1885	15,000	100,000
Hsien K'ang	(咸康)	1901	24,000	130,000
Yuan T'ung	(元通)	1889	24,000	130,000
T'ai An	(泰安)	1920	40,000	200,000
T'ung Teh	(同德)	1873	25,000	140,000
Ti Hua Kung	(綈華公)	1892	20,000	110,000
Sheng Yuan	(生源)	1891	40,000	200,000

*Supplementary capital.

	Name	Established	Capital	Annual Business
Haiyen				
Pao Ho	(保和)	1921	$45,000	$80,000
Chin K'ang	(晉康)	1872	30,000	80,000
Ting Sheng	(鼎升)	1921	100,000	——
Kung T'ai	(公泰)	1920	100,000	——
Ts'ungteh				
Shan Ch'ang	(善昌)	——	——	——
Yung Feng	(永豐)	——	——	——
Jen Ta	(仁大)	——	——	——
P'inghu				
T'ung Chi	(同濟)	1896	50,000	128,000
Heng T'ai	(恒泰)	1901	40,000	79,000
Kuang Chi	(廣濟)	1890	45,000	57,000
T'ai K'ang	(泰康)	1929	30,000	62,000
Chi Sheng	(濟生)	1886	36,000	54,000
T'ung Ho	(同和)	1887	38,000	40,000
T'unghsiang				
Hui Yuan	(滙源)	1869	40,000	90,000
Pao Ch'ang	(葆昌)	1873	36,000	80,000
Kung T'ai	(公泰)	——	——	——
T'ai Sheng	(泰生)	1914	37,500	70,000
Kung I	(公義)	1871	40,000	80,000
Chi T'ung	(濟通)	——	——	——
Kung Ho	(公和)	——	50,000	100,000
Wuhsing				
Lai T'ai	(來泰)	1915	48,000	——
Yü Ch'ing	(餘慶)	1896	30,000	——
Hsin Sheng	(新盛)	1866	50,000	——
Heng Yu	(恒有)	1881	40,000	——
Heng Yü	(恒裕)	1870	30,000	——
Tsu Sheng	(資生)	1883	30,000	——
Ch'ang Ta	(昌大)	1910	50,000	——
Hui Ch'eng	(惠貞)	1869	50,000	——
Teh Feng	(德豐)	——	——	——
Jen Ho	(仁瑞)	——	——	——
Teh K'ang	(德康)	——	——	——
I Hsing	(懿興)	——	——	——
Shao T'ai	(紹泰)	——	——	——
Heng Sheng	(恒盛)	——	——	——
Ch'ang T'ai	(昌泰)	——	——	——

	Name	Established	Capital	Annual Business
Wan T'ai	(萬泰)	——	——	——
An T'ai	(安泰)	——	——	——
Ch'ien Yuan	(乾元)	——	——	——
Ch'i T'ai	(啓泰)	——	——	——
I T'ai	(義泰)	——	——	——
Ch'ien Chi	(謙吉)	——	——	——
Chi Ho	(濟和)	——	——	——
Chi Feng	(濟豐)	——	——	——
Feng T'ai	(豐泰)	——	——	——
Kung An	(公安)	——	——	——
Heng Ch'ing	(恆慶)	——	——	——
T'ai Ch'eng	(泰成)	——	——	——
Jun T'ai	(潤泰)	1889	$30,000	——
Ch'eng Teh	(成德)	1917	32,500	——
T'ung T'ai	(同泰)	1869	40,000	——
Changhsing				
Kuang Sheng	(廣生)	1891	30,000	——
I Ho	(怡和)	1916	30,000	——
Chi Feng	(濟豐)	1926	30,000	——
Tung Yuan	(鼎元)	1926	20,000	——
Heng T'ung	(恆通)	1888	30,000	——
Feng Ta	(豐大)	1886	30,000	——
Tehts'ing				
Chi Ta	(濟大)	——	——	——
Teh Ch'ang	(德長)	——	——	——
Ch'ang Fa	(長發)	——	——	——
Ch'ung Sheng	(崇生)	——	——	——
Shan Hsiang	(善祥)	——	——	——
Teh Yuan	(德源)	——	——	——
T'ung Ch'ang	(同昌)	——	——	——
Chü Ho	(聚和)	——	——	——
Jen Ta	(仁大)	——	——	——
Anchi				
Pien Chi	(便濟)	1893	28,000	$70,000
Ninghsien				
Keng Yü	(賡餘)	——	30,000	——
T'ai Lai	(泰資)	1918	30,000	——
Pao Shun	(寶順)	1917	30,000	——
Fu T'ai	(復泰)	——	30,000	——
Sheng T'ai	(生泰)	——	30,000	——
Ch'ien T'ai	(乾泰)	1928	30,000	——

	Name	Established	Capital	Annual Business
Yü Sheng	(裕 昇)	1928	$30,000	——
Yü Ho	(裕 和)	1929	30,000	——
Yü Yuan	(豫 源)	1926	30,000	——
Yuan Ta	(元 大)	1927	30,000	——
Jui Ta	(瑞 大)	1927	30,000	——
Yuan Sheng	(源 深)	——	——	——
Yung Yuan	(永 源)	1918	30,000	——
Hui An	(惠 安)	——	30,000	——
Feng Ch'ang	(豐 昌)	1928	30,000	——
Ts'ung Yü	(崇 餘)	——	30,000	——
Shen T'ai	(慎 泰)	1927	30,000	——
Chih Shan	(協 善)	——	5,000	——
Yü Ch'ing	(餘 慶)	——	24,000	——
Hui Yuan	(惠 元)	——	30,000	——
Hui Yü	(惠 裕)	——	30,000	——
Sheng Yuan	(生 源)	——	30,000	——
Yuan Shun	(源 順)	——	15,000	——
An T'ai	(安 泰)	——	10,000	——
Shou Hsiang	(壽 祥)	——	20,000	——
Tsuch'i				
Ch'eng T'ai	(承 泰)	1928	20,000	$612,000
I Ch'eng	(義 成)	——	30,000	8,000*
Hsien T'ai	(咸 泰)	1867	36,000	8,000*
I Ho	(義 和)	1914	30,000	10,000*
Chi I	(集 義)	——	30,000	10,000*
Fenghua				
T'ung Yuan	(同 元)	1923	20,000	20,000
Hui Yü	(惠 裕)	1923	25,000	220,000
Pao Ho	(寶 和)	1904	25,000	18,000
Yü K'ang	(裕 康)	1905	20,000	17,000
Chenhai				
Yuan Ch'eng	(源 成)	1921	30,000	25,000
Jui Hsiang	(瑞 祥)	1930	35,000	21,000
Hsiang Feng	(祥 豐)	1875	40,000	29,000
Hsia Yuan	(洽 元)	1894	20,000	——
Heng Hsiang	(恆 祥)	1891	25,000	——
Fou Ch'eng	(阜 成)	1895	30,000	——
T'ung T'ai	(同 泰)	1929	29,000	——
Pao Ch'eng	(寶 成)	1894	35,000	——
Yü Ch'eng	(豫 成)	1898	30,000	——

*Interest.

Name	Established	Capital	Annual Business
Tinghai			
Ch'eng T'ai (成泰)	——	——	——
Fou T'ai (阜泰)	——	——	——
Hsiangshan			
Ch'ien Ta (乾大)	——	$60,000	$120,000
Shaohsing			
Yuan T'ai (源泰)	1923	10,000	19,600
Wan K'ang (萬康)	1917	10,000	19,000
T'ai Sheng (泰昇)	1914	40,000	95,300
T'ung Fu (同福)	1913	40,000	——
		50,000*	
Hou Yü (厚裕)	1916	18,000	22,400
Shang Teh (尙德)	1913	20,000	—
		29,000*	
Teh Feng (德豐)	1916	10,000	——
		25,000*	
T'ung T'ai (同泰)	1913	15,000	——
		30,000*	
Teh Mao (德茂)	1876	15,000	——
		30,000*	
Tung Jen I (同仁義)	1930	10,000	——
		20,000*	
Hou Chang Fu (厚昌復)	1919	36,000	——
T'ai Lai (泰來)	1925	40,000	——
I Teh (怡德)	1919	20,000	——
		30,000*	
Jung Ta (容大)	1915	20,000	——
T'ai Ho (泰和)	1918	15,000	——
		300,00*	
Yung Hsing (永興)	1863	10,000	28,000
Pao Hsing (寶興)	1913	10,000	22,000
Chin T'ai (晉泰)	1913	10,000	28,000
Teh K'ang (德康)	1921	18,000	26,800
T'ai Ho (泰和)	1916	18,000	25,500
Hsieh Yü (協裕)	1922	10,000	——
		30,000*	
Jung Teh (榮德)	1913	20,000	——
		20,000*	
Chi An (濟安)	1919	15,000	48,000
Tao Chi (道濟)	1919	15,000	27,000

*Suppiementary capital.

	Name	Established	Capital	Annual Business
T'ung Yuan	(通源)	1917	$10,000	——
			30,000*	
Heng Teh	(恒德)	1915	20,000	$48,000
San T'ai	(三泰)	——	20,000	47,800
Yü Feng	(裕豐)	1913	20,000	——
			28,000*	
Heng Feng	(恒豐)	1920	24,000	——
Ho Chi	(和濟)	——	——	——
Chiu An	(久安)	1925	16,000	45,000
Chung Ho	(中和)	——	——	——
I Ssu	(義思)	1873	18,000	——
			14,000*	
Chih Shan	(至善)	——	——	——
Jun T'ai	(潤泰)	1911	40,000	——
I Teh	(衣德)	1899	20,000	——
			30,000*	
Shen Teh	(愼德)	1899	18,000	——
T'ai K'ang	(泰康)	1913	30,000	——
Heng Teh	(恒德)	1914	30,000	——
			30,000*	
I Ho	(怡和)	1928	10,000	——
			20,000*	
Chia Teh	(嘉德)	1915	30,000	——
Kung I	(公益)	1920	15,000	——
			15,000*	
Ts'un Jen	(存仁)	1914	36,000	——
Ch'ien I	(謙益)	1914	18,000	
Hsiaoshan				
An Chi Hsin	(安吉新)	1919	20,000	45,900
Chi T'ai	(濟泰)	——	20,000	44,827
Yü T'ai	(裕泰)	1921	20,000	42,000
Hsü T'ai	(緒昌)	1867	30,000	79,800
An Jen	(安仁)	1920	40,000	51,728
T'ung Yü	(同裕)	1914	30,000	71,410
Hsien Ch'ing	(咸慶)	——	——	——
Fu T'ai	(復泰)	1917	18,000	29,214
Chung Fu	(中孚)	——	——	——
Wan T'ung	(萬通)	1914	20,000	38,000
T'ung I	(同義)	——	——	——
Chin Jen	(近仁)	1928	20,000	51,057

*Supplementary capital.

	Name	Established	Capital	Annual Business
Chuch'i				
Chih Yü	(稚 餘)	——	$150,000	$220,000
Ch'ien Yü	(謙 裕)	——	150,000	220,000
Pao Ch'eng	(寶 誠)	——	100,000	180,000
I K'ang	(貽 康)	——	120,000	200,000
Yüyao				
Yuan T'ai	(元 泰)	1868	20,000	280,000
I Yuan	(益 源)	1878	20,000	260,000
Ch'ien T'ai	(謙 泰)	1891	10,000	200,000
Hsien Heng T'ai	(咸恆泰)	1889	10,000	200,000
Fou Kang	(阜 康)	——	18,000	190,000
An Chi	(安 吉)	1872	20,000	210,000
Hui Ho	(滙 和)	——	18,000	230,000
Shih Teh	(世 德)	——	15,000	260,000
Hui Yuan	(滙 源)	——	——	——
T'ai Ho	(泰 和)	1914	40,000	170,000
Hui Yuan	(會 源)	——	17,000	150,000
Ho Chi	(和 濟)	——	——	——
Fu Sheng	(福 昇)	1915	10,000	180,000
Fu Ch'ang	(福 昌)	1912	15,000	150,000
Chi An	(吉 安)	——	——	——
Chi T'ai	(吉 泰)	1916	2,000	——
Shangyü				
T'ung Ho	(同 和)	1874	10,000	45,000
Ch'ien Teh	(謙 德)	——	——	——
Chi Ch'eng	(濟 成)	1922	36,000	46,200
Fou Ch'eng	(阜 成)	——	36,000	37,900
Jen Feng	(仁 豐)	——	——	——
Ch'enghsien				
Fou Ch'eng	(阜 成)	1904	8,000	——
Pao Shan	(寶 善)	1906	7,000	——
Chi Yuan	(裔 源)	1903	6,000	——
Chih Ch'ing	(稚 慶)	——	——	——
Jen Shou	(仁 壽)	——	——	——
Jen Teh	(仁 德)	——	——	——
Hsinchang				
Chi Yuan	(濟 源)	1930	10,000	25,000
Ch'eng Teh	(承 德)	1926	10,000	25,000
Hsieh Chi	(協 濟)	1925	10,000	24,000
Hsia Ho	(洽 和)	1914	12,000	27,000
Hsin T'ai	(新 泰)	1929	4,000	10,000
Ts'ing Hsiang	(菁 祥)	1913	18,000	50,000

Name	Established	Capital	Annual Business
Linhai			
Yü Yuan Ch'ang (余源昌)	——	——	——
Tao Yü Ta (陶裕大)	——	——	——
Huang Yuan Tai (黃元泰)	——	——	——
Lou Heng T'ai (婁恆泰)	——	——	——
T'ao Jen Ta (陶仁大)	——	——	——
Huang Yü T'ai (黃裕泰)	——	——	——
Huang Chin T'ai (黃晉泰)	——	——	——
Lu Yü Sheng (陸裕生)	——	——	——
Ma Ting Feng (馬鼎豐)	——	——	——
Huangyen			
T'ung Heng (同亨)	1921	$3,000	——
Kung Shen (公愼)	1930	3,000	——
T'ung Chi (同濟)	1927	2,000	——
Ch'ih Hui Sheng (赤惠生)	1928	3,000	——
Huang Fu T'ai (黃復泰)	——	4,000	——
Chou Hsieh Chi (周協濟)	1919	3,000	——
Chang Ta Yu (張大有)	1925	2,000	——
Yuan Yu Heng (阮有恆)	1915	8,000	——
Chang Yü Chi (張裕濟)	——	——	——
Yü Chin Feng (俞晉豐)	1912	4,000	——
Ch'en Fou K'ang (陳阜康)	——	4,000	——
Lu Teh Ta (盧德大)	——	——	——
Yü Ch'eng Ta (俞正大)	——	4,000	——
Yü Chin Yuan (俞晉源)	——	3,000	——
Yuan Yu Yü (阮有豫)	1918	3,000	——
Yeh Kuang Chi (葉廣濟)	1913	3000	——
Ch'ien Yü T'ung (乾裕通)	1914	2,500	——
Huangyen			
Lu Hsi Ch-ou (盧西疇)	1917	2,000	——
Wang T'ai Lai (王泰來)	1920	3,000	——
Kung Shen (公愼)	1932	10,000	$20,000
T'ung Heng (同亨)	1920	3,000	20,000
Ninghai			
Chü Ch'eng (聚成)	——	200,000	100,000
Hsieh Sheng (協盛)	——	——	——
Wenling			
Chin T'ai Feng (金泰豐)	1852	10,000	90,000
Chin T'ai Yuan (金泰源)	1852	20,000	100,000
Yuan Yu Feng (阮有恆)	1912	20,000	60,000
Yuan Yu T'ai (阮有泰)	1894	20,000	80,000

	Name	Established	Capital	Annual Business
Ch'en Chi Ch'eng	(陳濟成)	1904	$40,000	$120,000
Ch'en T'ai Ch'eng	(陳泰成)	1912	40,000	120,000
Wu Yü Chi	(吳裕記)	——	30,000	10,000
Ch'en Yü T'ai	(陳裕泰)	1894	20,000	60,000
Chin T'ai I	(金泰益)	1852	20,000	80,000
Yuan Yu K'ai	(阮有開)	1904	10,000	40,000
Ch'un Ho	(春 和)	1916	9,000	10,000
T'ai Ch'ang	(泰 昌)	1930	12,000	12,000
Ts'ui I	(萃 益)	1917	14,000	16,000
Pao T'ai	(寶 泰)	1930	12,000	12,000
Hsienchü				
T'ung Chi	(通 濟)	1926	20,000	40,000
Chinhua				
T'ung Ch'ing	(同 慶)	1884	48,000	94,000
Kuang Chi	(廣 濟)	1884	49,000	90,000
P'u Chi	(溥 濟)	1923	10,000	70,000
Lanch'i				
Wan T'ung	(萬 通)	1870	60,000	——
Tun I	(敦 義)	1926	20,000	——
Wan T'ai	(萬 泰)	1918	24,000	——
Hsieh T'ung	(協 通)	1890	45,000	——
Tungyang				
T'ung Fu	(同 福)	1918	30,000	60,000
Ho K'ang	(和 康)	——	——	——
Iwu				
Tun Hou	(敦 厚)	1902	40,000	50,000
Wui				
Hou Feng	(厚 豐)	1913	20,000	50,000
P'ukiang				
Kuang I	(廣 益)	1910	10,000	51,000
Lung T'ai	(隆 泰)	1883	20,000	90,000
Ch'ühsien				
I Ho	(億 和)	——	136,000	135,000
I Ch'eng	(億 成)	——	136,000	145,000
Ch'angshan				
Jen K'ang	(仁 康)	——	——	——
K'ai Hua				
Yung Chi	(永 濟)	1923	40,000	60,000

	Name	Established	Capital	Annual Business
Chienteh				
Wan Yuan	(萬 源)	1918	$20,000	$150,000
Ch'ing Feng	(慶 豐)	——	——	——
T'unglu				
T'ung T'ai	(同 泰)	——	——	——
Yungchia				
Teh Feng	(德 豐)	——	36,000	120,000
Shan Lai	(善 萊)	——	36,000	120,000
T'ung Chi	(通 濟)	——	——	——
Juian				
Ta Lai	(大 來)	——	30,000	160,000
Lots'ing				
Chin T'ai Ch'ang	(金泰昌)	1926	12,000	60,000
Po Chi	(博 濟)	——	——	——
P'inghu				
Ting Sheng	(鼎 盛)	——	——	——
Yühuan				
Chin T'ai Yü	(金泰豫)	1905	10,000	25,000

CHAPTER IV

INSURANCE COMPANIES

INSURANCE is a business of recent origin in China, and was first introduced in Shanghai, where an Underwriters' Association was organized in 1904. In Chekiang, the business probably started in Hangchow at a considerably later date. During 1919 and 1920, underwriting was very prosperous in Hangchow, but during the last few years, as the number of insurance companies has increased and competition became very keen, conditions have not been so good. In Ninghsien, the Yangtze and Sincere Insurance Companies were established in 1914, since when many insurance companies have been established in that city, as well as in Shaohsing, Yungchia and Linhai. Nearly all the underwriters in Chekiang are branch offices of Shanghai insurance companies. Most of them handle fire and water insurance, only a few doing any life business.

There are 104 firms handling insurance in Chekiang, distributed as follows:—Hangchow, 35, Ninghsien, 54, Shaohsing, 10, Yungchia, 4, and Linhai, 1. Of these companies, 36 are British concerns, and form the most influential group in the business, doing a much larger volume of business than the Chinese concerns which, on account of their comparatively limited capital and shorter history, cannot compete favorably with British companies. The business handled by companies of other nationalities, such as American and German, is still more insignificant, and represents only a very small part of the total business.

BOOK NINE

COMMUNICATIONS AND TRANSPORTATION

CHAPTER I

RAILWAYS

SHANGHAI-HANGCHOW-NINGPO RAILWAY

THE SHANGHAI-HANGCHOW-NINGPO Railway was built by two companies, one operating in Kiangsu and the other in Chekiang province; the right of construction being granted to the promoters by an Imperial Edict issued in 1905. In 1906 construction work was begun but proceeded slowly and unsatisfactorily, and in March, 1908, the Government signed an agreement with the British and Chinese Corporation for a loan of £1,500,000 to carry on the work. Opposition was at once raised by the original promoters, and renewed efforts were made to raise the money necessary to carry on constructional work. On the plea that China's "sovereign rights" were being sacrificed by a railway loan contract signed with foreign financiers, the opponents of the British loan project formed a company in Kiangsu and another in Chekiang, and their claim to the sole right of constructing the line were recognized by the Government. The loan agreement with the British and Chinese Corporation, however, could not be cancelled, and the Chinese Government was placed in a difficult position. In an endeavour to make the best of an awkward situation the Government drew up, with the two provincial Companies, a set of regulations whereby they received from the Government the cash necessary to build the railway.

The Kiangsu section of the railway (Shanghai-Fengching) was completed in January, 1909, while the Chekiang section (Fengching-Hangchow), was finished in May the same year, but though the provincial companies built the lines they were never able to manage them. Shareholders received no dividends, and owing to bad management a railway which should have paid handsomely showed a loss annually. The Government several times urged that the property be handled over at a valuation to the Board of Communications and managed as a state concern, but not until 1912-13, did the Kiangsu people realize there was no hope of any return on their investment and consent to a

transfer of the property to the Government as the only way of regaining any of their money. At a meeting of shareholders of the Kiangsu Company on April 2, 1913, a resolution was carried approving nationalization of the line, and on April 10 a formal petition was presented to the Government, Mr. Yang Ting-tung conducting negotiations with the Ministry of Communications. The scheme was ultimately approved by the Cabinet, and the line formally handed over to the Ministry of Communications on January 1, 1914.

In the meantime, shareholders of the Chekiang Company, being confronted with the same financial difficulties, appointed representatives to negotiate with the Government regarding nationalization of the Chekiang section of the railway, including the Fengching-Hangchow line, Kenshanmen (艮山門)-Kungchenchiao (拱宸橋) line, Ningpo-Tsaoê (寧紹) line, and the two proposed lines, Hangchow-Tsaoê and Ningpo-Sanpei (三北). On April 11, 1914, an agreement was signed, and in June what is now known as the Shanghai-Hangchow-Ningpo Railway was operated under Government management. In December, 1916, a connection with the Shanghai-Nanking Railway was completed, and through traffic commenced.

TRACK AND EQUIPMENT

It was the original plan to construct a line from Shanghai to Hangchow, thence to Ningpo across the Chientang river, but for various reasons the Hangchow-Ningpo section has been only half-completed, the gap—from Hangchow to Tsaoê—being now made good by the Hangchow-Shaohsing and Shaohsing-Tsaoê highways. The Shanghai-Hangchow line, covering a distance of 202 kilometres, which with side tracks, has a total length of 248 kilometres, has 26 stations:

Shanghai North (上海北站)	Minghsinchiao (明星橋)
Jessfield (梵皇渡)	Sungkiang (松江)
Siccawei (徐家滙)	Shihhutang (石湖蕩)
Lunghua Junction (新龍華)	Fengching (楓涇)
Meilung (梅隴)	Chiashan (嘉善)
Hsinchang (辛莊)	Chihsingchiao (七星橋)
Hsinchiao (新橋)	Chiahsing (嘉興)

Wangtien (王店)	Linping (臨平)
Hsiashih (硤石)	Hsienchiao (獻橋)
Hsiachiao (斜橋)	Kenshanmen (艮山門)
Chowwangmiao (周王廟)	Hangchow (杭州城站)
Changan (長安)	Nanshinchiao (南星橋)
Hsuchun (許村)	Zahkou (閘口)

The main track of the Ningpo-Tsaoê line is about 78 kilometres long, with side tracks of 15 kilometres. The railway, with Ningpo and Tsaoê as terminals, has 11 intermediate stations:

Chuangchiao (莊橋)	Yuyao (餘姚)
Hungtang (洪塘)	Machu (馬渚)
Tsuchi (慈谿)	Wufu (五夫)
Yehchia (葉家)	Iting (驛亭)
Changting (丈亭)	Pokuan (百官)
Shushan (蜀山)	

The branch line from Kenshanmen to Kungchenchiao is 8 kilometres in length.

The permanent way is 18 feet wide, and from 2 to 18 inches above the surrounding level. The 75-pound rails used in the Shanghai-Hangchow line were supplied by the Hangyang Iron Works, which also supplied the 85-pound rails used on the Ningpo-Tsaoê section. The gauge is 4 feet 8½ inches throughout. The first sleepers used were entirely to Japanese timber, but since nationalization of the enterprise other varieties of wood have been used. With regard to the gradients, the highest on the main line is 7 in 300, and on the branch lines, 7 in 250.

The railway crosses 26 iron bridges with a total length of 5,575 feet, costing $2,157,857, and 14 stone bridges, 159 feet in length, and costing $52,396.20. The number of culverts is 298, costing $164,277.17.

Formerly there were railway workshops operated in Shanghai, Kungchenchiao, and Ningpo. In 1917 the Shanghai was amalgamated with the Kungchenchiao plant, but the latter being still too small, a new workshop was built at Zahkou on a site of 40 *mou*.

The total number of locomotives is 36, of which 26 are provided with water-tanks. The 140 cars used in passenger traffic are made up as follows:—

First class	3
Second class	5
First and second combined	9
First class dining	1
Third class	59
First and third combined	1
Second and third combined	2
Second class dining	5
Fourth class	18
Staff	5
Guards' vans	29
Others	3

Freight cars number 491, with a total tonnage of 11,603, made up as follows: Covered cars, 279 (6,705 tons); open, 106 (2,402 tons); others, 106 (2,496 tons).

INCOME AND EXPENDITURE

In 1921 the railway's total revenue amounted to $3,258,689, and in 1931 was more than double—$7,386,844. A steady annual increase was shown with regard to income except in 1924 and 1927, the former being attributable to civil warfare between Kiangsu and Chekiang, and the latter to the northern expedition of the National forces. Complete statistics for 1932 are not available, but a decline in business is to be expected in view of the acute depression throughout Kiangsu and Chekiang in consequence of Sino-Japanese hostilities in Shanghai.

There are three main sources from which the railway derives revenue:—passenger traffic, freight, and miscellaneous, the first being the most important. From the following table it will be seen that while the railway enjoyed increasing revenue, expenditure showed similar expansion:

	REVENUE	EXPENSES Working	Maintenance	Managerial
1921	$3,258,689	$2,887,887	$ 827,344	$ 427,346
1922	3,663,009	3,183,613	928,493	441,666
1923	4,332,808	3,182,677	820,298	457,856
1924	4,287,352	2,940,945	652,373	569,839
1925	4,429,232	3,168,253	623,229	537,235
1926	4,978,626	3,553,958	763,003	625,212
1927	4,646,426	3,316,623	656,862	698,813
1928	5,622,075	3,828,348	759,240	778,531
1929	5,927,315	4,514,600	757,283	1,211,139
1930	6,396,232	4,680,959	889,832	1,009,939
1931	7,386,844	5,367,841	1,046,308	1,119,463
1932 (Jan.-Nov.)	5,694,741	4,425,597	640,229	1,010,036

The revenue from passenger traffic in 1932 amounted to $4,135,405, the number of persons carried totalling 5,252,740, as shown in the following table:

	Passengers	Revenue
January	476,472	$ 370,617
February	464,021	432,835
March	426,769	322,322
April	431,834	312,517
May	418,497	318,223
June	387,544	313,013
July	387,304	315,855
August	402,704	325,885
September	445,546	352,719
October	470,401	368,782
November	448,404	334,586
December	493,244	368,045
Total	5,252,740	$4,135,405

The freight carried on the Shanghai-Hangchow-Ningpo Railway in 1932 totalled 591,069,687 kilograms, with a gross revenue of $1,329,033.82, as shown in the following monthly returns:—

	Kilograms	Revenue
January	41,782,737	$ 116,948
February	5,720,005	5,631
March	23,975,459	39,401
April	43,200,750	49,302
May	49,291,234	118,318
June	35,256,879	106,423
July	54,817,393	146,687
August	64,140,431	149,990
September	65,230,393	152,363
October	67,739,525	155,885
November	72,665,747	147,221
December	67,249,134	131,310
Total	591,069,687	$1,329,033

HANGCHOW KIANGSHAN RAILWAY

While formally approved by the National Government, the Hangchow-Kiangshan Railway is a provincial enterprise, having been financed entirely by funds provided by Chekiang Province. It was started by the former Pro-

vincial Chairman, Mr. Chang Ching-Kiang (張靜江), and has been continued by his successors, the project being now under the direct charge of Mr. Tu Chen-Yuan (杜鎮遠) as Director and Engineer-in-Chief.

A railway linking Hangchow and Yüshan (玉山), Kiangsi, was proposed long ago by Dr. Sun Yat-sen in his Industrial Programme, to form a section of the Canton-Great East Harbour Line, but according to Dr. Sun's idea the railway should run in a general south-westerly direction on the north bank of the Chientang River, through Fuyang, Tunglu, Chienteh, Lanchi, Lungyu, Chuhsien and Kiangshan, with Yushan as its southern terminus. The fact that this route passes through some very hilly country, calling for expensive tunnelling and grading work, led to a diversion of the line being decided upon by the Provincial authorities. Starting at Kiangpien (江邊), which is on the south bank of the Chientang River, opposite Hangchow, the existing line runs south-west through the following towns and cities:

Kiangpien (江邊)	Chinhua (金華)
Hsiaoshan (蕭山)	Chumakan (竹馬館)
Pailutang (白鹿塘)	Lanch'i (蘭溪)
Linpu (臨浦)	Kufang (古方)
Chienshan (尖山)	T'angch'i (湯溪)
Meichih (湄池)	Huchen (滬鎮)
Chihpu (直埠)	Lungyu (龍游)
Paimen (白門)	Anjen (安仁)
Chuchi (諸暨)	Changshut'an (樟樹潭)
P'ait'ou (牌頭)	Ch'ühsien (衢縣)
Anhua (安華)	Nienlichieh (廿里街)
Chengchiawu (鄭家塢)	Houch'ichieh (後溪街)
Suchi (蘇溪)	Kiangshan (江山)
Iwu (義烏)	Hots'un (賀村)
Iting (義亭)	Hsint'angpien (新塘邊)
Hsiaoshun (孝順)	Hsiachen (下鎮)
Tangya (塘雅)	Yushan (玉山)

This route, while complying with the economic plans of the Provincial Government, is in no way opposed to Dr. Sun's industrial plan, and when nationalized the line can be easily connected with the Canton-Hankow Railway by extending to P'inghsiang (萍鄉) via Nanchang (南昌), while stretching south to upper Fukien.

FINANCING

With a view to minimizing the cost of construction, substantial reductions were made in the weight of rails, width of road-bed, and other features, though in the matter of gradients and curves (items which most vitally affect the cost) the line was built in conformity with the standards of the Ministry of Railways for the construction of Chinese Government Railways, and the track and all equipment are of standard gauge (4 ft. 8½ in.). Thus, while the strictest economy was practiced, the route of the line and design of all details were planned with the idea that later on the adoption of heavier standards would be necessary. So far as practicable, provision for this heavier service was made in the original construction of permanent works.

Of the construction funds of the Hangchow-Lanch'i section of the railway, $3,534,983.87 was supplied directly from the provincial treasury, and $3,600,000 obtained in the form of a loan from a group of banks in Hangchow including the Bank of China, the National Commercial Bank, the Agricultural and Industrial Bank of China and Chekiang Provincial Bank. In addition, $120,000 was appropriated from the second loan from Hangchow banks for the construction of the Chinhua-Yushan section. The total disbursement amounted to $7,255,760.68, including $316,244.25 for principal and interest payment of the bank loan.

With regard to that portion of the line extending from Chinhua to Yüshan (the section between Chinhua and Lanch'i being a branch line), the cost of construction was estimated at $6,110,000, distributed between two main classes of expenditure: purchase of foreign construction materials and engineering, labour, and other expenses. While the former was defrayed by a loan secured from the British Boxer Indemnity Fund, amounting to £200,000 (of which £140,000 has been spent, the remainder being reserved for later extensions), the latter, classified in two categories and amounting to total to $3,900,000, was supplied partly from the provincial treasury and partly (about $3,560,000) from a second loan from Hangchow banks. Expenses necessary for the operation of the service belong to the first category, and were estimated at approxi-

mately $3,560,000. Under the second category falls the cost of safety device equipment and business expenses at the beginning of operation, amounting to about $340,000.

TRACK AND EQUIPMENT

The track and all equipment are of standard gauge, that is, 4 feet, 8½ inches broad. Rails of 35 pounds are used throughout, and each pair of rails rests on 14 sleepers, mainly of Oregon pine.

The locomotives and cars required for initial operation were selected to suit the estimated requirements of the first few years of operation. While these are necessarily of limited weight and capacity, as dictated by light track standards, the details of all units conform to the best modern practice. Vacuum-brakes and automatic-couplers are used throughout, passenger trains are lighted by electricity, and various devices have been installed which the better railways have found to contribute to efficient service, the comfort of passengers and the safety of employees. The following are details of the rolling stock:—

6 Locomotives, capable of hauling 280 tons each.
3 Locomotives, capable of hauling 200 tons each.
30 Passenger cars (including two first-class dining-cars, 6 second and third-class cars, 16 third-class cars, two third-class kitchen cars, and four mail and guards' vans).
20 Open 15-ton cars, without sides, mainly for construction purposes,
8 Open 15-ton cars, with sides,
20 Open 15-ton cars, with sides,
2 Closed 12-ton goods cars,
30 Closed 15-ton goods cars,

Between Kiangpien and Lanch'i there are 100 bridges, of which six are iron with concrete abutments, except that crossing the P'uyang Kiang (浦陽江) at Chienshan, which is supported by wooden piers. Of the remainder 18 are arch bridges and 76 consist of timber bridges, which will be later supplanted by permanent structures. Only 12 large bridges are found on the second section of the line, while small crossings number 41.

Most of the station structures are of a temporary nature but the station platform at Lanch'i is unique in that it is made of solid rock. A shallow cut had to be made at the point selected for the station, and in making this excavation care was taken to leave the rock in place to form the platform.

With regard to warehouses, construction has been already completed at Kiangpien, Hsiaoshan and Lingpu, while similar accommodation will be provided near the stations of Anhua, Chengchiawu, Such'i, Iwu, Iting, Hsiaoshun, Chinhua, and Lanch'i.

Since the railway runs through many districts traversed by important waterways, the authorities with a view to improving transport business and so increase revenue, built railway wharves at Kiangpien, Linpu, Iwu, Chinhua, Lanch'i, etc. to connect trains with water traffic. Roads between the stations and the wharves are well paved to facilitate transportation.

REVENUE

At the beginning of operations, on June 1, 1931, when the Kiangpien-Chienshan section was opened to traffic, the railway carried freight strictly on cash basis. It was not until July 1, 1932, when the Kiangpien-Lanch'i section was completed, that a comparatively complete scheme in regard to freight traffic was introduced, the railway undertaking the transportation of parcels, live stock, coins, etc. On August 1 the same year the C.O.D. system was introduced, and on August 30, mail matter was accepted for the first time. October 1 saw the inauguration of a joint passenger traffic service with the Shanghai-Nanking and Shanghai-Hangchow lines, and by July 1, 1933, with the completion of all necessary equipment, the line was able to start a through freight traffic service in connection with the Shanghai-Hangchow Railway.

The railway yielded very little when it commenced operations in June, 1931, but was able to enjoy increased revenue with the gradual completion of constructional work during succeeding months, as shown in the following table:

		Limit of Line	Total Income
1931	June	Ch'ienshan	$ 2,556.79
„	July	Chuch'i	15,758.95
„	August	„	17,407.23
„	September	„	15,130.05
„	October	Pait'ou	20,371.67
„	November	Anhua	24,195.21
„	December	Iwu	38,367.00
1932	January	„	73,281.53
„	February	Chinhua	48,649.76
„	March	Lanch'i	67,815.67
„	April	„	66,426.11
„	May	„	99,339.23
„	June	„	77,486.07
„	July	„	99,550.13
„	August	„	107,046.35
„	September	„	94,503.30
„	October	„	96,048.17
„	November		92,859.89
„	December	„	97,786.30

CHAPTER II

HIGHWAYS

IF AN example is sought of the constructive spirit of the Chekiang Provincial Government, highway building is a representative instance. The history of modern road construction in the province dates back to 1920, when the Provincial Highway Bureau was established. It was, however, not until 1927 that any noticeable development began to be seen, and by 1929 the province had 700 kilometres of highways open to traffic, of which 384 kilometres were the result of Government activities, the remainder being built by private enterprise, while the sections on which regular motor-bus services had been introduced exceed 550 kilometres. The succeeding year saw the completion of additional highways to a length of 105 kilometres. In 1931 the province possessed more than 950 kilometres of modern roads completed, with another 200 kilometres under construction. The length of new roads completed in 1932 amounted to 423 kilometres, with 99 kilometres partially constructed and another 800 kilometres being surveyed. In addition, more than 110 kilometres were being constructed under the auspices of *hsien* governments.

NATIONAL HIGHWAY (NANKING-HANGCHOW)

The Nanking-Hangchow highway traverses two provinces, Kiangsu and Chekiang. The Chekiang section has a length of 137 kilometres, starting from Chiap'u (浹 浦), between which city and Hangchow there are 13 stations viz, Ch'anghsing (長 興), Lichiahsiang (李 家 巷), Yangchiap'u (楊 家 埠), Huchow (湖 州), Shihchiach'iao (施 家 橋), Ts'ingshan (菁 山), Tichi (埭 溪), Sanchiaopu (三 橋 埠), Wuk'ang (武 康), Shangpo (上 柏), Tunghuang (東 篁), P'engkung (彭 公), and Hsiaoho (小 河).

Mokanshan (莫 干 山), a popular summer resort, is three miles from Sanch'iaopu, and in order to facilitate travelling, a branch road, 7 kilometres long and 7½ metres in width (the same as the main highway), has been built to connect the two places.

About $1,500,000 was spent on the Chekiang section of the National highway, according to a report by the Chekiang Provincial Government, and on the whole the road is better in this province than in Kiangsu. Except at P'ingyao, all bridges along the highway are of concrete. The two bridges at the South and West Gate of Huchow were particularly elaborate, costing respectively $30,000 and $100,000. In the hilly districts excavation work proved an expensive item in the cost of construction.

A bus service is operated by the Chekiang Provincial Highway Bureau. Fares are divided into two classes, special and ordinary, the former applying to services maintained between 6.30 a.m. and 6.30 p.m. During this period passengers pay 50 per cent over the usual fare when travelling between 6.30 p.m. and midnight, and double the ordinary rates between midnight and 6.30 a.m. Personal baggage not exceeding 30 catties per passenger is transorted free.

PROVINCIAL HIGHWAYS

Shanghai-Hangchow Highway.—The Shanghai-Hangchow Highway, 215 kilometres in length, links many important coastal districts in Kiangsu and Chekiang. The road is divided into six sections: Shanghai-Minghong (閔 行), Minghong-Nanchiao (南 橋), Nanchiao-Choling (柘 林), Choling-Chinssuniangch'iao (金 絲 娘 橋), Chinssuniangch'iao-Chapu (乍 浦) and Chapu-Hangchow. With the exception of the Shanghai-Minghong section, which is eight metres wide, with a sidewalk of six metres, the road is 7½ metres in width and the sidewalk three metres.

The section of the highway in Chekiang Province is 139 kilometres long, covering the last two sections abovementioned. The road between Chinssuniangch'iao and Chapu lies entirely in the district of P'inghu, and is faced with broken brick and clinker. The section from Chapu to Hangchow, known also as the Hangchow-P'inghu Highway, has a clinker surface.

Three important branches of this road have been built: to Zakow (閘 口)-Yuanhua (袁 花), 4½ kilometres; to

Huohiatou (湖家兜)-Ch'angan (長安), 6¾ kilometres; and to Chapu-P'inghu, 13 kilometres.

Hangchow-Ch'anghua Highway. — The Hangchow-Changhua Highway starts from Hangchow and terminates at Yülingkuan (昱嶺關), Anhui province, a distance of 153 kilometres, of which 39 kilometres represents the section from Ch'anghua to Yülingkuan. The road is divided into four parts, as follows:

Hangchow-Yühang (杭餘段).—This section has Sungmuch'ang (松木場) in Hangchow and Shanhsilung (山西衖) in Yühang as its termini, with Kutang (古蕩), Laotungyueh (老東岳), Liuhsia (留下), and Hsienlinpu (閑林埠) as intermediate stations. In addition to the main road, which is 28 kilometres in length, there are two branches from Sungmuch'ang to Kuanyinch'iao (觀音橋) and Kenshanmen (艮山門) respectively, the former being 2¾ kilometres long while the latter is 3½ kilometres in length.

The road is six metres broad thruoghout and paved with broken stone. The section in Yühang passes over some hills, but is good for both automobiles and carts.

Yuhang-Linan (餘臨段)—This section starts from Yühang and ends at Hualungchen (化龍鎮), Linan, passing through the villages of Shihha (石哈), T'iaot'ou (跳頭), Wangchiapu (汪家埠), Shiht'ingtsu (石亭子), Hoshan (鶴山), Linglung (玲瓏) and Hsiawu (下塢). It has a gravel surface, and the width ranges from 4½ to 5½ metres. Since 1924 a bus service has been operated by the Yu-Lin Bus Company (餘臨汽車公司). The principal commodities transported on this road consist of silk piecegoods, cocoons, tea, bamboo-shoots, wheat, rice, etc.

Linan-Ch'anghua (臨昌段)—This section is 40 kilometres in length and 7½ metres wide, with a sand surface. The important stations are Hengt'angpu (橫塘舖), Tsaoch'i (藻溪), Tuishihp'u (對石舖), Fangyuanp'u (方元舖), T'aiyangchen (太陽鎮) and Lulingp'u (蘆嶺舖). Rice and medicinal herbs are the principal commodities transported on this road.

Ch'anghua-Yülingkuan (昌昱段).—Yülingkuan, in the district of Changhua, is an important entrance to Anhui province. The road, 39 kilometres long and 8 metres wide, has a gravel surface. The country traversed is mountainous, and Painiuchen (白牛鎮) and Chiak'ou (頰口) are the stations between the terminals.

Changhsing-Ssuanchen Highway.—The Ch'anghsing-Ssuanchen (四安鎮) Highway forms an important link between Chekiang and Anhui. It leads to Chiehp'ai (界牌), and thence to Kuangteh (廣德), Anhui. The road has a length of 40 kilometres and a width of 8 metres, with gravel surface. The largest village passed through is Tienpingchiao (天平橋).

Chinyun-Lishui Highway.—This is a main highway connecting Chinyun and Lishui, and has not been completed, and of its total length of 52 kilometres, 21 are in the district of Chinyun. The road is mainly built with gravel, and runs over hills in several parts. Tungtu (東渡) and Tungch'i (東溪) are the only important villages touched.

Yungk'ang-Chinyun Highway.—This road connects Yungk'ang and Chinyun, via Ch'ients'angchen (前倉鎮), Shihch'uchen (石柱鎮) and Huangpits'un (黃碧村). The width of the road is seven metres, and the distance within the Yungkang district is 16 kilometres, while that in Chinyun is 18 kilometres. Broken stone was used for the surface. Rickshas and automobiles are the chief means of transportation, and the principal commodities carried consist of hams, cotton piecegoods, imported articles, and salt.

Changshan-Huapu Highway.—This highway starts from Ch'angshan and ends at Huapu (華埠) in the district of K'aihua, having a total length of 24 kilometres and a width of six metres. Wheelbarrows are the only means of conveyance. The road covers a distance of 20 kilometres within the Ch'angshan district, and runs across rugged country. The section in K'aihua passes over a plain, and the road has a clay bed and sandy surface.

Hangchow-Fuyang Highway.—The road from Wulinmen (武林門), Hangchow to Shanhsianglung (善祥弄),

Fuyang is 38½ kilometres long and seven metres wide, made of sand and stone. Carts are the chief means of transport, and tea is the principal commodity carried. This highway has three branches: Chuant'ang (轉塘)—Liuhsia (留下) via Wangchiashang (王家上), 11 kilometres long; Lingchiach'iao (凌家橋)-Lianghu (良戶), 2½ kilometres; and Wangchiashang-Hsiaohoshan (小和山) 4½ kilometres.

Hangchow-Shaohsing Highway.—This highway is in two parts, divided by the Chientang River. The section on the northern bank starts from Kungchench'iao (拱宸橋) and terminates at Sanlangmiao (三廊廟), via Hsiaoho (小河), Kuanyinch'iao (觀音橋), Sankuanlung (三官衖), Wulinmen (武林門), Hsitachieh (西大街), Hupin (湖濱), Yungchinmen (湧金門), Ts'ingpo'men (清波門), and Fengshanmen (鳳山門). The total distance is 9¼ kilometres on which a regular bus service is operated.

The part on the southern bank of the river, 51¾ kilometres in length and 7½ metres wide, is usually known as the Hsiaoshan-Shaohsing Highway. The Chekiang Provincial Government operates a bus service with 13 stations: Hsihsing (西興), Chuanpu (轉塘), Mochiakang (莫家港), Yinlung (吟龍), Yach'ien (衙前), Ch'ients'ing (錢清), T'aiwang (泰望), Yuanshe (阮社), Ko'ch'iao (柯橋), Mitossu (彌陀寺), Tsuin (脩儀), Hsikuo (西郭) and Wuyun (五雲). This highway connects with the Hangchow-Kiangshan railway at Hsiaoshan and with the Shaohsing-Tsaoê-Ch'enghsien highway at Shaohsing. The bed of the road is of rock, with a surface of broken stone.

Shaohsing-Tsaoê-Chenhsien Highway.—This highway, starting from Wuyun (五雲), Shaohsing, stops at present at Kaopa (高壩), but will extend to Ch'enghsien. The road is 36½ kilometres long and 7½ metres wide, passing Tunghu (東湖), Kaopu (皋埠), Fankiang (樊江), T'aoyen (陶堰), Chingk'ou (涇口), Tungkuan (東關), Tsaoê (曹娥), and Tsaokiang (曹江). A regular bus service is operated.

Chinhua-Wui-Yungk'ang Highway.—This road links Chinhua with Yungk'ang via the north-eastern corner of Wui, to which a branch road is to be built up to the city wall. The highway has been constructed under the auspices of the Chekiang Provincial Government with funds borrowed from the three cities concerned. It is surfaced with broken stone and the main road has a length of 48 kilometres, while the branch is 15 kilometres long. The branch joins the main road at Neipaichen (內白鎮).

Ch'ühsien-Lanch'i Highway.—This road links Ch'ühsien, Lungyu, T'angch'i and Lanch'i, where it meets the Hangchow-Kiangshan Railway. At Ch'ühsien the road makes contact with two highways, Ch'ühsien-Ch'angshan and Ch'ühsien-Kiangshan. It is built of broken stones and has a length of 100 kilometres and a width of seven metres. A motor-bus service has been opened, but there is not much freight traffic. The important towns through which the road passes are Changshut'an (樟樹潭), Anjenchieh (安仁街), Lungyu (龍游), Hsiangchen (湘鎮) and Lopu (羅埠).

Huangyen-Chekuochen Highway.—This road extends from Tsingyuehmen (靖越門), in Huangyen, to Tsêkuochen (澤國鎮), on the border of Yungchia and Huangyen. It is 34¾ kilometres long and 7½ metres wide, with a gravel surface, and passes through Shihlip'u (十里舖), Huangshant'ou (璜山頭), Tungyü (桐嶼), Luch'iaochen (路橋鎮) and Paifengch'iao (白楓橋).

Huangyen-Linan Highway.—This highway, 14¼ kilometres long and 7½ metres wide, starts from Luch'iaochen (路橋鎮), Huangyen and terminates at Haimenchen (海門鎮), Linhai (臨海) via Hungchiach'ang (洪家場) and Chiehp'ait'ou (界牌頭). It has a stone bed with sand surface.

Lishui-Yunho Highway.—This highway, which is a main road between Lishui and Yunho, is under construction, and when completed will be available for motor traffic. The distance within the district of Lishui will be 30 kilometres and that in Yunho, 26.

Iwu-Tungyang Highway.—This highway, 22¾ kilometres long and 7 metres wide, extends from Iwu railway-station to the West Gate of Tungyang. It has a sand bed and gravel surface. A motor-bus service is operated, with hams, medicinal herbs, artificial fertilizer, etc. the principal commodities carried.

Wuhsien-Chiahsing Highway.—This highway, starting from Wuhsien, in Kiangsu, links that province with Chekiang, and is not quite completed. The section within the district of Chiahsing covers a distance of 14 kilometres, and is 7½ metres wide.

Ninghsien-Chenhai-Tsuch'i Highway.—This road, extending from Ninghsien to Kuanhaiwei (鎮海衛), Tsuch'i, is 44 kilometres long, with a width of 6½ metres, linking three large cities of Ninghsien, Chenhai, and Tsuch'i, and passes through many towns, including Paishashih (白沙市), Kuissuch'iao (貴駟橋), Lot'och'ioashih (駱駝橋市), Hsiehp'uchen (蟹浦鎮) and Sunp'ushih (崧浦市). A bus service will be soon established.

A branch road has been built to connect Chenhai with Hsiehp'u (蟹浦), via Shiht'anghsia (石塘下), Yüfants'un (俞范村), Ch'ienhoushih (前後施), T'iench'iaoshih (甜橋市), Shahot'ou (沙河頭), Paimen'tou (白門頭) and Shihchifang (十七房).

Ninghsien-Fenghua Highway.—The importance of this highway lies in the fact that it fills a gap in the network between Fenghua and other important cities in the province; the road leading to Ninghsien, whence a number of highways radiate in addition to the Hangchow-Ningpo railway. The total distance covered is 30 kilometres, and among the important towns passed are Tuant'ang (段塘), Shihchi (石碶), Lishê (樑社), Hengchang (橫漲) and Kiangk'ou (江口).

The highway has a surface of broken stone, and a motor-bus service is open. Among the commodities carried are bamboo shoots, tea, and oysters, freight being about 20 cents per 100 catties.

From this main highway a branch road extends for a distance of 19 kilometres from Kiangk'ou to Shant'ing (山亭) through Tapu (大埠), Chishan (崎山) and Ch'ik'ou (溪口). The road is broken stone and is open to motor traffic.

Ch'enghsien-Hsinchang Highway.—This road is 14½ kilometres long, the width being 11 metres in the district of Ch'enghsien, and 6½ metres in Hsinch'ang. It is partly surfaced with broken stone, and with gravel in Ch'enghsien. An omnibus service is maintained at the rate of 60 cents per passenger.

P'ingyao-Shuangchi Highway.—This highway, 19 kilometres long and 7½ metres wide, runs between P'ingyao (瓶窰) and Shuangchi (雙溪) by way of Ch'angming (長明), P'engkungling (彭公嶺), Shihmen (石門), Chihpiwu (賜璧塢) and Henghu (橫湖). From Shuangchi a branch has been constructed to T'angpu (塘埠), a distance of 5¾ kilometres.

Yühang-Wuk'ang Highway.—This runs from the West Gate of Yühang to P'engkungling, in Wuk'ang, passing Ch'anglo (長樂) and P'anpanch'iao (潘板橋), whence a branch has been built to Shuangchi. The length of the main road is 22½ kilometres, and that of the branch, 5 kilometres.

HSIEN HIGHWAYS

Hangchow Municipality.—There are five highways within the area of the Hangchow Municipality, as follows:

Kiang-Hsü (江墅路).—This is a main road traversing the Municipality from south to north. It starts from Fengshanmen (鳳山門) and extends to Wulinmen (武林門), and from thence to Kungch'enchiao (拱宸橋), a distance of 3½ kilometres. The road is broad (13 metres), and surfaced with asphalt.

Nanshan (南山路).—This extends from Lakeside Park to the Su Dyke (蘇堤), a distance of 3¼ kilometres. It has a gravel surface, and serves very well for motor traffic.

Hsitachieh (西大街).—This starts from Lakeside Park and ends at Wulinmen, where it joins the Nanking-Hangchwo Highway. The road has a length fo 1½ kilometres and is surfaced with asphalt.

Sungmuch'ang (松木場路).—Extending from Paikung Road (白公路) to Sungmuch'ang (松木場), a distance of 940 metres, this road finally merges into the Hangchow-Yuhang Highway. It is 13 metres in width and built of crushed stone.

T'singt'ai (清泰路).—This road runs from east to west and is an important thoroughfare in the Municipality. Starting from Ts'ingt'aimen (清泰門) and joining Kiang-Hsü road at its other end, the road covers a distance of 1½ kilometres, with a breadth of 13 metres. The surface is of asphalt.

Hanghsien.—In the district of Hanghsien, there are two highways: namely; Hanghsien-P'ingyao and Hanghsien-T'angch'i (塘棲).

Hanghsien-Pingyao.—This connects the centre of Hanghsien with its suburbs, and is about 8½ kilometres in length. The road is covered with gravel, and automobiles and carts compose most of the traffic.

Hanghsien-Tangchi.—Starting from Ts'ingt'aimen (清泰門), this road runs out to T'angch'ichen (塘棲鎮), a village in the northern suburbs of Hanghsien. It is 40 kilometres long, and is surfaced with sand.

Yüt'sien.—Four old mountain paths which have been improved radiate from the city of Yüts'ien. They are as follows:

Yüts'ien-Ch'anghua—This path runs westward, ending at Changhua via Chieht'outs'un (界頭村), a distance of 15½ kilometres, with a width of two metres.

Yüts'ien-Hsinteng—This path, running south-east for a distance of 14¾ kilometres, stops at Fujungling (芙蓉嶺), Hsinteng, and is only 1.3 metres wide.

Yüts'ien-Chienchiukuan (千秋關)—This path is 28 kilometres long and 1.3 metres wide.

Yüts'ien-Hsiaofeng—This path leads to Chiling (吉嶺), Hsiaofeng, is 32½ kilometres in length, and 1.3 metres in width.

Ninghsien.—In the district of Ninghsien, there are two highways constructed by the *hsien* government:—

Ninghsien-Chenhai—This road extends from Chiyangchiao (吉陽橋), Ninghsien to Chenhai by way of Ch'ilitien (七里墊), Fumingch'iao (福明橋), Shengtiench'iao (盛墊橋), T'ient'ungchuang (天童莊), Wuhsiangch'i (五鄉磧), Paochuang (寶幢) and Yüwangssu (育王寺). It is 19 kilometres long and 6½ metres broad, surfaced with gravel. In addition to being a main route connecting Ninghsien and Chenhai, it is also important strategically.

Ninghsien-Hengshanpu (橫山埠)—This road, starting from Ch'iutao (邱蹈) and extending to Hengshanpu via Mochiyen (莫枝堰), Kuanyinchuang (觀音莊) and Tasung (大嵩), is of military importance. It has a total length of 43 kilometres, and passes through some hilly country.

Chenhai.—There are hsien highways recently constructed or contemplated in Chenhai, as follows:

Chenhai-Ch'uanshan (穿山)—About 45 kilometres in total length, this highway runs from Kiangnanshih (江南市) to Ch'uanshan by way of Hsiaokang (小港), Chingshih (青峙), Shihkaot'ang (石高塘) Tach'it'ou (大碶頭), Ts'ingshuichiao (清水橋), Hsiap'u (霞浦), and Ts'aich'iao (柴橋). It has a clay bed, covered with gravel. Ricsha provide the most usual means of transportation.

Ch'uanshan-Yüwanglingshan (育王嶺山)—A preliminary survey of this road has been completed, which will be 21 kilometres long, and end at Yüwanglingshan, where it meets the district highway of Ninghsien. The important towns passed include Ts'aich'iao (柴橋), Hsiap'u (霞浦), Chuchiats'un (朱家村), Ts'ingshuich'iao (清水橋), Shihch'iu (石湫) and Yinglohot'ou (瓔珞河頭).

Hsiangshan.—In this district there are two highways built by the *hsien* government, as follows:

Hsiangshan-Shihp'u (石 浦)—This road, 68 kilometres in length, has been rebuilt on an old country path, which passes two important villages, Tungch'i (東 溪) and Ch'angkuowei (昌 國 衛). The district traversed is very hilly, and not many vehicles are found, goods (consisting of fish, grain, cotton fabrics, etc.) being usually carried on the shoulders of porters.

Hsiangshan-Haitun (海 墩)—This road, 25½ kilometres long and 2½ metres wide, starts from the eastern suburbs of Hsiangshan, and of the many villages passed Chenchaoshih (陳 兆 市) is the most important. Among the principal commodities transported along this road are cotton goods, grain, and fish.

Nant'ien.—The only highway in this district runs from Fanau (樊 岙) to Hop'u (鶴 浦), a distance of eight kilometres. Ricsha is the chief method of transportation.

Ch'enghsien.—From Chenghsien as a centre, two highways have been constructed:

Ch'enghsien-Sungshut'an (松 樹 潭)—This road starts from the eastern city gate of Ch'enghsien, and has a length of 8½ kilometres. Motor-bus fares are at the rate of 40 cents per passenger per trip.

Ch'enghsien-Changlo (長 樂)—This is the main highway connecting the city of Ch'enghsien with various villages. Its length is about 26 kilometres, and being very broad (7½ metres), is open to motor traffic. The fare by bus is 50 cents per passenger from the West Gate to Kanlinchen (甘 霖 鎮), and $1 to Changlo.

Linhai.—In the district of Linhai there are two highways, but as they are not well built, traffic is rather difficult on rainy days.

Ch'eng-Ta Road (城大路)—This starts from the city of Linhai and ends at Tat'ien (大田), and is an important road linking urban and country districts. Ricshas are used on this road.

Tiao-Chao Road (釣趙路)—This connects Tiaoyüt'ing (釣魚亭) with Chaochiatu (趙家渡), a distance of 5½ kilometres.

Ninghai.—There are four higways radiating from the city of Ninghai, as follows:—

Northern Route—This road stops at Fenghua, a distance of 68 kilometres, the section within the district of Ninghai being 34 kilometres long. Groceries, paper, fish, and timber are the principal commodities carried.

Southern Route—This road leads to Linhai and has a length of 80 kilometres, of which 45½ are in the district of Ninghai. The region traversed is very hilly and goods are largely carried by porters.

Western Route—This road extends to T'ient'ai, a distance of 68½ kilometres, of which 34 are within the district of Ninghai. The road passes through many hilly districts, and being very narrow is not good for vehicular traffic.

Eastern Route—This road connects Ninghai with Hsiangshan, a distance of 68½ kilometres, of which about 34 are in the former district and about 23 kilometres run over hilly country. Timber, paper, groceries, and fish the principal commodities transported.

Huangyen.—Two *hsien* highways have been constructed in this distruct, as follows:—

Ho-Hsi Highway (閤西公路)—This runs through the western suburbs of the district, from the West Gate to Santouchow (山頭州) a distance of 10 kilometres.

Mei-Ch'i Highway (梅溪路)—This is an important road connecting the district with Lots'ing and Wenling. It starts from Shihlip'u (十里鋪), and is over 7 kilometres long.

Lanch'i.—Starting from Ch'ihsichen (溪西鎮) and terminating at T'ants'un (檀村), on the border of Shouch'ang, the Lanch'i-Shouch'ang highway is 37¾ kilometres long, the section in Lanch'i being 23½ kilometres long and nearly seven metres wides.

P'ukiang.—The only district highway in P'ukiang is called the P'u-Chung Road (浦鐘路), 24¾ kilometres long, and connecting the city with the west bank of the Chengchiawu (鄭家塢). Since part of this road has a dirt surface, motor traffic is possible only in fine weather.

Ch'ühsien.—In the district of Ch'ühsien, there are four *hsien* highways, all connected with the Ch'ühsien-Lanch'i Provincial Highway, as follows:

Chiühsien-Ch'angshan—42 kilometres long, the section within the district of Chuhsien being 22 kilometres. The road is open to motor traffic, the bus fare being $1.20 from Ch'ühsien to Ch'angshan.

Ch'ühsien-Kiangshan—This connects the city with Kiangshan, a distance of 42 kilometres, of which 22¾ kilometres are in the district of Chuhsien. A motor-bus service is in operation, the fare being $1.20.

Tachowchen (大洲鎮)—*Changhsut'an* (漳樹潭)—This road runs through the central and southern part of the district, and is 15 kilometres long. A motor-bus service has been started on this highway, with foreign piecegoods and paper as the principal freight. The fare for passengers is 30 cents.

Tuche (杜澤)—*Huangchiashan* (黃家山)—This road is 14 kilometres in length and open to motor traffic, the bus fare being 25 cents. Among the freight carried provisions, foreign piecegoods, and paper are the most important lines.

T'angch'i.—The most important district highway is that running from the city to Hsiap'an (下潘), a distance of seven kilometres. It is not yet open to traffic.

Kiangshan.—There are two highways in Kiangshan, constructed by private capital and on which regular motor-bus services are operated.

Chühsien-Kiangshan—The section of this road in Kiangshan is 22¾ kilometres long and six metres wide. It is surfaced with gravel, and the bus fare is $1.20. Water-pipe tobacco and paper are the most important commodities carried.

Kiangshan-Kuangfeng—This road, 57 kilometres in length, leads to Kuangfeng (廣豐), Kiangsi. A bus service is operated except during bad weather, with water-pipe tobacco and paper as the principal commodities carried as freight.

Changshan.—Two district highways lie in this district, as follows:

Ch'angshan-Yüshan—This road goes to Kiangsi province, ending at Yüshan (玉山), a distance of 42 kilometres, of which 21 kilometres is in Ch'angshan. Nine metres broad and surfaced with gravel, it is good for motor traffic, the bus fare being $1.20. Large quantities of salt, paper, and cotton piecegoods are carried on this road.

Ch'ühsien-Ch'angshan—The section in the district of Ch'angshan is 20 kilometres long, with a sand surface. The bus service is often suspended during rainy weather.

K'aihua.—In the district of K'aihua only one highway, from Huapu (華埠) to Haolingkuan (濠嶺關), a distance of 35 kilometres, has been completed, but is not yet open to traffic. For strategic purposes two other roads, from K'aihua to Shuian and from Huap'u to K'aihua city, are to be built.

Shunan.—The construction of two highways is being planned, Shunan-Shuian and Tunch'i (屯溪)-Chienteh, a survey of the former having been completed.

Shuian.—Two roads are to be built, connecting this district with Shunan and K'aihua respectively.

Shouch'ang.—In this district the building of two highways is contemplated, as follows:

Lanch'i-Shouch'ang—Construction has been started and the section within the district of Shouchang will be about 14¼ kilometres in length.

Tunch'i-Chienteh-Shouch'ang—When completed, this road will start from Chienteh and terminate at Tunch'i, Anhui province, via Shouch'ang. The section in Shouch'ang is about 14¼ kilometres in length.

Lishui.—From Lishui as a centre, three highways radiate, as follows:

Lishui-Chinyun—This ends at Sanhuangling (三皇嶺), Chinyun via Yench'uan (岩泉), a distance of 51½ kilometres. The road is covered with broken stone throughout, and being very narrow and passing through so many mountainous regions, vehicular traffic is almost impossible. Commodities are more easily carried by porters, who charge from $1.50 to $2.00 per picul.

Lishui-Ts'ingt'ien—With a lengh of 85½ kilomeres, this road links Lishui and Shihfan (石帆) in the district of Tsingtien, by way of Hsiaho (廈河) and Chungan (中岸). The region traversed is very hilly, and transportation of heavy loads is difficult.

Lishui-Takangt'ou Shang (大港頭上)—This road links Lishui, Shungyang, Yunho and Lungch'uan, and is 68½ kilometres in length, the section in Lishui being 28½ kilometres. The entire road is covered with broken stone, and as the district is very hilly, porters are employed to carry goods. Shihniu (石牛) and Pihu (碧湖) are important villages touched by the highway.

Hsuanp'ing.—The only important highway in this district is that running from the North Gate of Hsuanping to Shuikuit'an (水鬼灘) on the border of Wui. This road, 51 kilometres long, renders the district easily accessible to Chinhua, through which incoming and outgoing goods are shipped by the Hangchow-Kiangshan Railway.

MOTOR TRAFFIC

According to recent investigation the number of motor vehicles, including cars, buses, and trucks, running on the various highways of Chekiang province total 345, distributed as follows:—

	Buses	Cars	Trucks
Chekiang Provincial Highway Bureau (浙江省公安局):			
Hsiaoshan-Shaohsing Section	45	2	2
Hangchow-Ch'anghsing „	22	—	—
Hangchow-P'inghu „	7	5	—
Hangchow-Ch'anghua „	2	1	—
Ninghsien-Fenghua „	16	6	—
Others	18	—	11
Hang-Yü Bus Company (杭餘汽車公司)	16	13	—
Yü-Lin Bus Company (餘臨汽車公司)	9	1	2
Wu-Lin Bus Company (武臨汽車公司)	5	1	1
Hang-Ping Bus Company (杭瓶汽車公司)	4	4	—
P'ing-Hu Bus Company (瓶湖汽車公司)	3	2	3
Shao-Ts'ao-Cheng Bus Company (紹曹嵊汽車車司)	19	8	1
Ch'eng-Ch'ang Bus Company (嵊長汽車公司)	6	2	—
Ch'eng-Hsin Bus Company (嵊新汽車公司)	8	1	—
Yung-Hua Bus Company (永華汽車公司)	6	5	—
Hsi Hu Hsing Chi Hire-car Serivce (西湖鑫記汽車行)	—	4	—
Ta Ya Ho Chi Hire-car Service (大亞鶴記汽車行)	—	4	—
Nanyang Hire-car Service (南洋租車部)	—	4	—
Hushan Hire Car Service (湖山汽公行)	—	5	—
Central Garage (中央汽車行)	—	5	—
Eastern Garage (東方汽車行)	—	5	—
Shanghai Garage (上海汽車行)	—	3	—
San Yu Garage (三友汽車行)	—	6	—
Chekiang Garage (之江汽車行)	—	5	—
Pao Hua Garage (寶華汽車行)	—	5	—
Hai Feng Garage (海豐汽車行)	—	6	—
Lung Fei Garage (龍飛汽車行)	—	5	—
Chenchang Garage (宸昌汽車行)	—	4	—
Black Cat Garage (黑貓汽車行)	—	3	—
Wulin Transportation Company (武林運貨公司)	—	—	7
Shun Ta Transportation Company (順大運輸公司)	—	—	1
Hangchow Transportation Company (杭州運貨公司)	—	—	6
Kianghsu Transportation Company (江蘇運貨公司)	—	—	9

CHAPTER III
WATERWAYS

WITH its long coastline and the many important rivers and numerous smaller streams including the Hangchow Bay (杭州灣) Tsientang River (錢塘江) Nimrod Sound (象山港), the Ling River (甌江) The Ou River (甌江), Feiyun River (飛雲江) and Ao River (鰲江), Chekiang has a very convenient means of water transportation. Among the rivers, lakes, creeks, and canals in Chekiang the Che River (浙江) is the longest, starting from Haining and Shaohsing, passing Hangchow, Hsiaoshan, Fuyang, T'unglu and Chienteh at which point it branches into two rivers, the Hsin An River (新安江), and the Lan River (蘭江), the former reaching as far as Huichow (徽州) of Anhui and the latter traversing Lanch'i. The River is known in different names in different sections, that section from Haining to Hsiaoshan being known as Tsientang River, Fuch'un River (富春江), at T'unglu, T'ung River (桐 江), and at Chienteh Ch'ililung (七里瀧). The length of Chê River (excluding Hangchow Bay) is 202 kilometers, that of Hsinan River (section in Chekiang province) 94 kilometers, and that of Lan River 46 kilometers.

Ling River, lying in the district of Linhai is 59.23 kilometre long and has three branches, the Yungning River (永寧江) passing Huangyen the Yungan Chi (永安溪), traversing Hsienchü and the Shihfengch'i (始豐溪), passing T'ientai. The trunk course of Ou River passes Yungchia and Ts'ingt'ien, with a length of 80 kilometre. It has two important branches, the Ta Ch'i (大溪), 250 kilometres long, passing Ts'ingt'ien, Lishui, Yunho, Lungch'uan, and Ch'ingyuan, and the Hsiaoch'i (小溪), 178 kilometres long traversing Ts'ingt'ien, Chingning and Ch'ingyuan. Feiyun River starts from Juian and ends at T'aishun, navigable by both steam launches and sail boats. That section in Juian district is 59 kilometres long, and that in Taishun 111 kilometres, making the total length 170 kilometres. Ao River lies in the district of P'ingyang,

starting from Kuaopu (古鰲埠) and measuring 66 kilometres, and is navigable by steamers and sail boats. Chao Ch'i (苕溪), with its source at east Tienmushan (東天目山) in Linan, and passing Yühang, Hanghsien, Tehts'ing, Wuhsing, Ch'anghsing, Anchi, and Hsiaofeng, has a total length of 289 kilometres and is navigable by sail boats. This river is known by three different names, that part from Linan northeast to Tehts'ing is known as East Chao Ch'i (東苕溪) at Wuhsing, Lung Ch'i (龍溪), and from Ch'anghsing to Hsiaofeng, West Chao Ch'i (西苕溪).

HANGCHOW MUNICIPALITY AND HANGHSIEN

The Chê River Chaoch'i, the Grand Canal, Shang River (上河) and Hsia River (下河) are the famous rivers and canals in Hangchow Municipality and Hanghsien.

Chê River starts at Tachienshan (大尖山), passes Haining, Shaohsing, Hsiaoshan, Hanghsien, Fuyang, T'unglu and Chienteh, with a length of 202 kilometres long, and with varying between 260 and 2,300 metres, that part lying in Hanghsien being 40 kilometre in length. Traversing the southeastern and southwestern parts of Hanghsien the Chê River is the only important waterway linking towns and villages like Fants'un (梵村), T'ienchih (天池), Foushan (浮山), Yuanchiap'u (袁家浦), and Chouchiap'u (周家浦). Both steam launches and sail boats are plying in the river. Passenger fare is one cent per kilometre for the launches, and a freight of $4 a day for a boat of over 4-ton capacity. Firewood, charcoal, tea, rice, salt, etc. form the principal articles transported on this river. There are 15 steam launches plying the river in Hanghsien, running up and down twice every day. The T'iaoch'i, connects Linan, with Anchi, passing Yühang, Hanghsien, Tehts'ing, and Wuhsing, and is an important waterway between those districts and the northwestern part of Hanghsien. Of the total length of 289 kilometre only 22.50 kilometre is within the district of Hanghsien, but there are quite important towns on its banks as P'ingyao (瓶窯), Anchi (安溪) Shangchien (上塘), etc. Only sail boats are now navigating in the river, and the important products transported on this route are firewood, bamboo, charcoal, tea, and salt.

Connecting the Hangchow Municipality with Wukiang and Wuhsien, Kiangsu, the Grand Canal, passing Ch'ungteh, T'unghsiang, and Chiahsing, is quite an important waterway for transporting Kiangsu and Chekiang products. The section of the Canal in Hanghsien is 40 kilometres long, touching important points as Polu (博陸), Wuhang (五杭), and T'angch'i (塘棲). The fare charged by steamers is averaged at 9 cents per kilometre and that of sail boat 7 cents per kilometre. The important out-going cargo from Hanghsien is composed chiefly of tea, while groceries, foodstuffs, and cotton piece goods are the chief imports.

Shang River is not only an important means of communication between Hangchow Municipality and Haining, but is depended to a quite large extent for irrigation purpose. The whole river is 57 kilometres long—that part in Hangchow being 28.50 kilometres. Lingp'ingchen (臨平鎮) and Changanchen (長安鎮) are the two important towns through which the river passes. Groceries and cotton piece-goods are the important products conveyed on this river by sail boats at about $3 a day.

Hsia River enters Hanghsien from Hangchow Municipality, going through Hsiaohochen (小河鎮), Hsiangfuchiao (祥符橋), Shangch'ienpu (上綫埠), Fengkow (奉口), and Toumen (陡門), and emptying into the Grand Canal. The river, 25.50 kilometres long and from 16 to 30 metre wide, is navigable by sail boats all the year round, the charge of the boat being the same as that in Shang River. Goods transported on this river are largely groceries and cotton piece-goods.

HAINING.

The Chê River, Shant'ang River (上塘河), Hsiat'ang River (下塘河), and Yuanhuat'ang (袁花塘) are the important waterways in Haining. The River connects Haining with Shaohsing, Hanghsien, Hsiaoshan, Fuyang, T'unglu, and Chienteh, the Shangtangho leads to Hangchow the Hsiatangho to neighbouring districts, and Yuanhuat'ang joins Haining with Haiyen.

The part of Chê River within the hsien limit of Haining, a distance of 36.5 kilometres, is known as the Tsientang River and is navigable by both steamers, and sail boats. Important towns on the river are Mamukang (馬牧港), Taching (大荆), Tingch'iao (丁橋), Hsin- (新倉), and Tachienshan (大尖山).

Shangt'ang River runs from Haining to Hangchow, of a length of 57 kilometres that part in Haining being 28.5 kilometres long. Motor boats are now plying between the two districts and Changan (長安) and Husts'un (許村), once every day at 14 cents each person. Soy beans, broad beans, wheat, silk, and cocoons form the staple cargoes transported in this river.

Hsiat'ang River empties into Huangpoo river and and the Grand Canal and is an important waterway leading to Shanghai or to Wuhsien via Chiahsing. The total length of the river is 57 kilometres and the section in Haining, measuring a little over 30 kilometre long and about 9 metre wide passes Hsiehchiao (斜橋) and Hsiashih (硤石), Except when the weather is extremely dry, the river is navigable all the year round. Important cargoes transported on this river are soy beans, broad beans, wheat, silk, and cocoons.

Yuanhuat'ang traverses the eastern part of Haining and is 28.5 kilometres long in the district—the total length 57 kilometres—has a smooth current and passes Yuanhuachen (袁花鎮). Important products transported on this rivers are largely wheat and beans.

FUYANG.

The Fuch'un River, which is the middle part of Chê River and one of the two important rivers in Fuyang, connects this district with Haining, Hangchow, Shaohsing, Hsiaoshan, T'unglu, and Chienteh, and is 51 kilometres long and over 30 metre wide in Fuyang. Steamers of the Chen Hsing (振興) and Ta Hua (大華) Companies run up and down the river calling at Lishan (里山) and the city of Fuyang, the fare ranging from 20 cents to $1 a person.

The Ta Yuan Ch'i (大源溪) is an important river running between the city of Fuyang and Ta Yuan (大源), and lies entirely within the district. Being 8.5 kilometres long and about 13 metres wide the river is only plyable by small boats.

YUHANG.

Among rivers in Yühang South T'iaochi (南苕溪) is the most important, because the others are only branches of this river. Starting from Linan, passing Yühang, Hanghsien, Tehts'ing, Wuhsing, Ch'anghsing, and Anchi, ending at Hsiaofeng, and emptying into the Grand Canal and Huangpu River, the river in Yühang district is 27 kilometres long and over 30 metres wide. The southern section of Yühang city and P'ingyaochen (瓶窰鎮) are the important points on the river.

The Middle T'iaochi and the North T'iaochi are the branches or South T'iaochi, the former joining P'ingyaochen with Hengpanchen (橫坂鎮), and the latter with Paichang (百丈). The Middle T'iaochi in Yühang is 18 kilometres long and about 7 metres wide, while the north T'iaochi is 40 kilometres long and 7 metres wide. Bamboo raft is almost the only means of communication on both rivers.

Yühang Tang Ho (餘杭塘河) cuts through Yühang and Hanghsien and connects Yühang with Huhsu (湖墅), As it is only about 4 metres wide, it is plyable only by small boats. The length is 13 kilometres.

LINAN.

With its source at the western part of the district, the T'iaochi leads from Linan to many important districts. The section of the river in Linan is 47 kilometres long, and bamboo, timber firewood, etc., are transported on this route. Important towns along the river are Pitsungts'un (碧淙村), Ts'ingyunch'iao (青雲橋), Hsinch'i (新溪), Ts'ingshan (青山), and the city of the Linan hsien.

Nan Kiang (南江) starts at Kanshants'un (甘山村), terminates at Hsiayüts'un (下舆村) emptying itself into T'iaoch'i before entering the Yühang district. It is the main waterway of various parts of Linan. Along this stream are found important towns like Shihshantou, (石山頭) Ts'ingshanchen (青山鎮), and the hsien city. Goods transported on this river consist chiefly of bamboo, timber, etc.

Pei Kiang (北江), another name for that section of the middle T'iaochi in Linan, starts from Hengpan (横畈), empties into T'iaochi at P'ingyao in Yühang, and flows through Yakuan (雅官), Longshuichiao (冷水橋), etc. The water is shallow and only rafts are used to carry bamboo, woods, firewoods and charcoal.

YUTS'IEN.

Originating from Fushouling (福壽嶺) and flowing through Machupu (蘇車埠), and Yinchuchen (印渚鎮), the Yuch'i (魚溪) is an important route leading from Yüts'ien to Fenhsui and T'unglu. With a rocky bed and strong current the Yüch'i is only navigable by small junks carrying principally salt, rice, corn, tung oil and miscellaneous goods, at 30 cents per 100 catties. The lower course of the river is called Fuch'i (浮溪).

The Tsaoch'i (藻溪) has its source at the northwest of Tsingniuling (青牛嶺) and empties itself into the lower course of Yuch'i after passing Tsaochichen (藻溪鎮) and Tuishihp'u (對石浦). The water is so shallow and only the lower part of the river is plied by bamboo rafts.

HSINTENG

Only one river, the Ngoh Kiang (鄂江) with its two tributaries, Koch'i (葛溪) and Sungchi (松溪), flows through the district of Hsinteng. Koch'i begins at Paichangling (百丈嶺), passes Tungchiaochen, (桐橋鎮) Sanchichen (三溪鎮), and the city of Hsinteng, and joins the Sunch'i forming the Ngoh Kiang. The total length 50 kilometers. Sunch'i starts at Fenghuanghsishan (鳳凰西山), flows through Yungchangchen (永昌鎮), Sunch'i-

chen (松溪鎮), and the city of Hsinteng, and meets Koch'i. The whole course is 18 kilometres long. Ngoh Kiang continues on its course and ends at Tung'kiang (桐江) via Luchuchen (淥渚鎮) and Hsienkouchen (峴口鎮). This river not only serves as an important channel for communication and transportation—bamboo rafts and light draught boats provide facilities for carrying native many products, such as charcoal, firewood, bamboo, timber, rice, foodstuffs, etc. to outside districts—the Ngoh Kiang and its tributaries are very useful for irrigation purposes.

CH'ANGHUA

Liuch'i (柳溪), with its two branches, Chiakouch'i (頰口溪) and Yunchi (雲溪), links the district of Ch'anghua with Yüts'ien, Fenshui, T'unglu, and Hangchow. The rough bed, especially at Taliut'an (大溜灘), 8 kilometres from Hochiaochen (河橋鎮), make navigation difficult and small rowing boat is the only craft plying this river.

Chiakouch'i (頰口溪) a branch of Liuch'i, lies entirely in the district of Ch'anghua, starting from Chihling (績嶺), passing Lukouchen (路口鎮), Chihshihchen (頰口鎮), T'angchiawan (湯家灣), Painiuchen (白牛鎮), and the city of Ch'anghua. Being very rocky it is navigable only by small boats.

Yunch'i (雲溪) in Changhua is 23 kilometre long and flows through Chuank'ouchen (湍口鎮), Chihshihchen (赤石鎮), and Hoch'iaochen (河橋鎮). As the current is very rapid, the river is not quite suitable for navigation.

CHIAHSING

The Grand Canal enter Chiahsing from Wukiang hsien in Kiangsu, and leads to Tunghsiang, Ch'ungteh, Hangchow, and Yühang. It is also an important route linking Chiahsing with Hangchow and Wuhsien, Kiangsu. The part of the river in Chiahsing is over 30 kilometres long, with T'aoching (陶涇), the city of Chiahsing, Wangchiaching, (王家涇), etc. on its banks. Steam-launches, sail boats, and rowing boats are plying the river and silk, cocoon, and rice are the important cargoes carried.

P'inghutang (平湖塘), an important waterway between Chiahsing and P'inghu, has a length of 25 kilometres within the hsien. On the stream are found steam-launches, sail boats, and row boats carrying tiles, bricks, lumbers, and foodstuffs to Tungshank'ou (東柵口), Shihpalich'iao (十八里橋), and Hsinfeng (新豐).

Haiyent'ang (海鹽塘), the main route from Nanhu (南湖) to Haiyen is plied by steam-launches, sail boats, and rowing boats. Principal articles carried on this river are bricks, tiles, timbers, and cereals.

Chiashantang (嘉善塘) runs from Tungshank'ou to Chiashan hsien and is navigable by sail boats and rowing boats. The part of the river in Chiahsing is 13 kilometres long.

Ch'angshuit'ang (長水塘) links Haining and Chiahsing through Mahuang (蟒蝗), T'angch'iao (塘橋), and Wangtien (王店), and is plied by steam-launches, and sail boats, which carry principally foodstuffs, cereals, tiles and bricks between various points. The length of the stream in the district is 20 kilometres.

CHIASHAN

In Chiashan there is a large number of rivers and creeks. Huat'ingt'ang (華亭塘), is the trunk water route leading from Chiashan city, to Changhuichen (張匯鎮), and Fengchingchien (楓涇鎮). Both steam-launches and junks are plying the river, and rice and pottery are the chief articles carried.

Tungkuahut'ang (冬瓜湖塘) links Chiahsing with Chiashan via Sant'ien (三店) and Yangmiao (楊廟). There are two steam-launches at present carrying passengers between the two districts, while cargo, principally rice and potteries, are transported by junks.

Weit'ang (魏塘) enters the city of Chiashan from Chiahsing and is navigable by junks all the year round.

Luhsutang (瀘墟塘) flows in the city of Chiashan, leading to Ch'ienyao (千窰), Hsit'ang (西塘), and T'ao-

chuang (陶莊). On this route there are now 4 steam-launches, regularly carrying passengers and many junks transporting rice and potteries.

Paishuit'ang (白水塘) connects the city of Chiashan and Changhuihsiang (張匯鄉), and is plied by steam-launches and junks.

Hsiching (茜涇) is an important channel between towns and villages in the district. Important towns like Fengchingchen (涇楓鎮), Yaochuangch'iao (姚莊橋), and Yüchiahui (俞家匯) are found on its banks. Steam-launch service is 4 times a day is being maintained.

Wutsut'ang (伍子塘) cuts the city from Tayunhsiang (大雲鄉) in the south and from Yunganhsiang (永安鄉) on the north, and is navigable by both steam-launches and junks.

Tayunt'ang (大雲塘) lies on the boundary of Chiahsing hsien and Tayunhsiang (大雲鄉), and is 7 kilometres long navigable by both steam-launches and junks, the former running 2 times a day.

Ch'angch'unt'ang (長春塘) starts from the city, traverses Ch'ienyaochen (千窯鎮), and Ch'ienhunghsiang (千洪鄉), with a total length of a little less than 6 kilometre. A regular steam-launch service is maintained, and sailing-boats are another means of communication.

Yühuit'ang (俞匯塘) stretches from the boundary of Yüyaohsiang (俞姚鄉) and Tingshanhsiang (丁棚鄉) to Yüchiahui (俞家匯) and Tingchiashan (丁家山), with a length of 5 kilometre. It is navigable by both steam-launches and sail boats, the former running 2 times a day.

Huach'engt'ang (化成塘) is also a quite short river of 4.5 kilometres long, but is quite important, because it passes Yunganhsiang (永安鄉) and the busy town of Fengchingchen (楓涇鎮). The river is plied by both sail-boats and steam-launches, the latter running 60 times a month.

HAIYEN

Chiahsingt'ang (嘉興塘), a river about 22 kilometres long and from 30 to 50 metre wide in Haiyen, is so called, because it links Haiyen with Chiahsing, via Shentang (沈 蕩) and Yüch'engchen (斛 城 鎮). There is steam-launch service running twice a day, the fare from the city of Haiyen to Yücheng being 10 cents per passenger, to Shentang 20 cents, and to Chiahsing 40 cents. Besides steam-launches there are sail-boats transporting groceries, imported goods, piecegoods, Canton products, silk, tea, etc. between various points.

Pinghut'ang (平湖塘), leading from Pinghu to Hsitangchen (西 塘 鎮) and Paishuchen (白 苧 鎮), and terminating at Haiyen, is about 16 kilometres long. Steam-launch and sail-boat services are maintained carrying passengers and groceries, piecegoods, silk and tea.

Chaopaot'ang (招 寶 塘) leads from Haiyen, to Hsüyuchê (許 油 車) and, Tungyuanchen (通 元 鎮), with sail-boats running 3 times a day transporting chiefly groceries, miscellaneous goods, piece-goods, silk and tea. The section of the river in Haiyen is 14 kilometres long.

CH'UNGTEH

The Grand Canal is almost the only important river in Ch'ungteh, which serves as the chief means of communication between Ch'ungteh and Hangchow, Tunghsiang, Chiahsing, and some districts in Kiangsu. After passing the important town of Shihwan (石 灣) and the city of Ch'ungteh the river branches into two streams, one reaching Ch'anganchen (長 安 鎮). The part of this river in Ch'ungteh is 25 kilometres long, navigable by both sail-boats and steam-launches. The Soochow-Hangchow steamers call at Shihwan once every other day, and the steam-launches plying between the city and the neighbouring towns touches Shihwan, the city, and Ch'angan once every day.

P'INGHU

Yuch'itang (魚圻塘), originating from Tunghu Lake (東湖), traverses Chuhsienhui (朱仙匯) and empties itself into Huangpu river at Chinshan hsien. The section of the river in P'inghu is 40 kilometers in length.

Yents'angho (鹽艙河), a branch of Kuangch'ent'ang (廣陳塘) and the principal waterway from Kuangch'en (廣陳) to Hsints'ang (新倉) and the city, is navigable by both steam-launches and sail-boats, carrying cotton and grain. The section of the river in P'inghu is 15 kilometres long, passing important towns such as Panluts'un (半路村), Yunyüts'un (尹圩村), and Luch'uanli (盧川里).

Kuangch'ent'ang (廣陳塘), is also known as Maoho (泖河), with its source at Hengmaot'ou (橫泖頭), links the city of P'inghu with Tats'un (大村), Shihts'un (時村), Kuangch'en (廣陳), Tiaoyü (調圩), Chouyü (周圩), Huats'un (華村) and Shihyu (石漁), and further to Chinshan hsien in Kiangsu. The river in P'inghu is 27 kilometres long, and is plied by steam-launches and sail-boats all the year round, the former running twice a day and carrying largely grain, oil, and rape-seed.

Haiyent'ang (海鹽塘) is the continuation of P'inghu-t'ang in Haiyen district, and is the principal waterway between Haiyen and P'inghu. The part in P'inghu measures 8 kilometres long and is navigable by both steam-launches and sail-boats.

Chap'ut'ang (乍浦塘), the principal waterway between Chap'u (乍浦) and P'inghu via Hungits'un (虹霓村), is open to both steam-launches and sail-boats, the former running 4 times a day. That section lying in P'inghu is 15 kilometres in length.

Hungt'ang (洪塘) entering the hsien from Chiahsing, passes Shihpalich'iao (十八里橋), and Hsinfengchen (新豐鎮) is regularly plied by steam-launches and sail-boats, the former carrying principally agricultural products, leaving and arriving at the district 4 times a day.

T'UNGHSIANG

The Grand Canal forms the principal waterway in Tunghsiang, traversing the district from southwest to northeast, with a distance of 25 kilometres. Important towns and villages like Shihwan (石灣), Hsiuch'i (綉溪), Tsaolin (皂林), and Miaochih (妙智) are found on its banks, and steam-launches and sail-boats run regularly between Wuhsing and Chiahsing.

WUHSING

T'iaoch'i (苕溪) the Grand Canal and Tiehchi (霅溪) are the principal rivers in Wuhsing. T'iaoch'i, entering Wuhsing at Ch'ienchiat'anshih (錢家瀆市) Tehts'ing, traverses the hsien and leads to Changhsing. The Grand Canal passes Sot'iaoch'iao (鎖苕橋), Shengshanshih (昇山市), Ch'engshêchen (晟舍鎮), Chits'unshih (織村市), Tungch'ienchen (東遷鎮), and Nanhsun (南潯), before going into Chentseh (震澤), Kiangsu. Tiehho, a branch of T'iaochi, passes Chienlungchiao, (見龍橋) Hengkang (橫港) and Tach'ienchen (大錢鎮), emptying itself into Taihu Lake (太湖). The length of T'iaoch'i in Wuhsing is 47 kilometres, that of the Grand Canal 44 kilometres, and of Tiehho 15 kilometers. All are navigable by both steamers and sail boats, with the exception of the last named which is only plied by sail-boats.

In addition to the three rivers above-mentioned, there are many other streams and creeks, being tributaries to the main rivers. As to sailing routes there are five more important ones.

The **Huchow-Wusih** line (湖錫線), connecting Wuhsing with Wusih via Tach'ienchen (大錢鎮), bringing the city in touch with cities and towns long the Nanking-Shanghai railway, and regular launch-services are maintained.

The Huchow-Shanghai line (湖申線), linking Wuhsing with Shanghai via Chiukuan (舊館) and Nanhsun, the principal artery for transporting Wuhsing products to Shanghai; launch-services running every other day.

The Huchow-Hangchow line (湖杭線), starting from Wuhsing and ending at Hangchow via Yuanchiahui (袁家滙), Tikang (荻港), and Lingho (菱湖), launch-services running 30 times a month.

The Huchow-Ch'anghsing line (湖長線), the principal water route between Wuhsing and Changhsing through Tiehshuich'iao (鐵水橋), Paitzuchiao (八字橋), and Hsük'ouchen (墟口鎮); launch-services daily.

The Chiahsing-Huchow line (嘉湖線), a principal route between Wuhsing and Chiahsing, via Shuanglinchen (雙林鎮) and Wuchen (烏鎮); launch-services 15 times a month.

CH'ANGHSING

Ssuanch'i (四安溪) lies in the southwest of the city and connects the city with Ssuan (四安) via Wulich'iao (五里橋), Lüshan (呂山), Hunghsingch'iao (虹星橋) and Kuanti (管埭). A steam-launch line, the Changhsing-Ssuan line (長四線), is maintained. The river is also suitable for sail-boats and junks. Rice and grains form the important cargoes carried on the river.

T'iaochi (苕溪) run through Ch'anghsing, with a length of about 19 kilometres, and is plied by steam-launches and sail-boats. The Huchow-Meich'i (湖梅線) steam-launch line starts from Wuhsing, passes the city of Ch'anghsing, Hsüts'angch'iao (青倉橋), Hsiayuantu (下源渡), Kangk'ou (港口), and Hsiaoch'ik'ou (小溪口), and ends at Meich'i (梅溪). Goods transported on this route are chiefly imported and miscellaneous goods.

Joch'i (箬溪) lies entirely in Ch'anghsing and connects the city with Hoch'ichen (合溪鎮), with a length of 50 kilometres. The lower course is navigable by sail-boats and junks, which carry passengers and goods principally consisting of firewood, charcoal, and imported goods.

The Ch'anghsing-Huchow line (長湖線), from Ch'anghsing to Wuhsing via Joch'i and T'iaoch'i—is another important water-route. Steam-launches and sail-boats ply between the two cities every day.

TEHTS'ING

With T'iaochi' and its branches and the Grand Canal running through the city, Tehts'ing is connected with neighbouring districts by four steam-ship lines. The Tehts'ing-Huchow line (德湖綫) starts from Tehts'ing passes Loshêchen (洛舍鎮) and Linghuchen (菱湖鎮), and ends at Wuhsing. There are both steamers and sail-boats services every day. As there is no direct way from Tehts'ing to Wuhsing on land, transportations on this route are very busy. The Hsinshih-Hanchow line (新杭綫) joins Hsinshih (新市) in Tehts'ing with Kungch'ench'iao (拱宸橋) in Hangchow, via city of Tehts'ing and Tangch'ichen (塘棲鎮). The Tehts'ing-Ch'angan line (德長綫), with daily steamer service connects the city of Tehts'ing with Ch'anganchen (長安鎮), via Tamachen (大麻鎮), and T'angch'ichen. The Hsinshih-Shangpo line (新上綫) links Hsinshihchen in Tehtsing and Shangpochen (上柏鎮) in Wuk'ang, via Erhlangch'iao (二郎橋).

WUK'ANG

Yüyingch'i (餘英溪), which starts at Hsialangts'un (下郎村), passing on to P'aitow (筏頭), Wuk'ang city Ch'anganchen, and T'ungshats'un (通沙村), is the only outlet for bamboo products from Wuk'ang. The upper section of the river is rocky, but the lower course is navigable by sail-boats. Goods transported on the upper Yüyingch'i is composed largely of bamboo products and on the lower, foodstuffs and cereals.

Hsiangch'i (湘溪) runs from Kuch'iao (谷橋) eastward to T'ungchich'iao (通濟橋), with Shangpo (上柏), Hsiapo (下柏), and Erhtu (二都) on its banks, and is a very important waterway in south Wuk'ang. Steam-launches run once every day, stopping at Shangpo and sail-boats once every three days.

Fuch'i (阜溪) flows from Yüch'ingch'iao (餘慶橋), passing Shangshihch'iao (上市橋), Sanch'iapu (三橋埠), and Shihtsinchiao (時津橋), ending at Shihshants'un (獅山村). Steam-launches run once every day and sail-boats once every 3 days. Goods carried on this river are largely bamboo products and cereals.

Lungch'i (龍溪), a branch of East T'iaoch'i (東苕溪) enters the eastern border of the city from T'angchiatu (唐家渡), Hangchow, and leaves it in the north at Mochiawan (莫家灣), with Nanyaotu (南窰渡) and T'angwan (唐灣) on its banks. The river suitable for sail-boats carrying mountain products and cereals.

ANCHI

T'iaochi is the only important river in the hsien connecting Anchi with Wuhsing. The river with a length of 83 kilometres in the district traverses Tiehshuich'iao (雪水橋), Hsiaochik'ou (小溪口), and Chingwan (荊灣). It is plied by steam-launches, sail-boats, row-boats and bamboo rafts. Bamboo products form the largest export, and groceries, oils and salt are the staple imports.

HSIAOFENG

T'iaochi enters the city from Anchi and traverses Hangkaichen (杭垓鎮), Hsiyüchen (西圩鎮), Ch'ihluchen (赤壚鎮), T'angfuchen (塘福鎮), etc., the length of the river in the district being 4 kilometers. Only 9 months in the year river is navigable, and the chief cargoes are usually composed of bamboo, charcoal, oils, salts, cloths, and groceries.

Tungp'angch'i (東浜溪) with its source at Ningkuo (甯國), Anhui, and passing Changts'un (章村), Tangkow (湯口), the Hsiaofeng city, and Anchi, is navigable by small boats and rafts only.

Tach'i (大溪) begin at Paishuichen (白水鎮), leads to Anchi, and empties into Taihu Lake. Only small boats and bamboo rafts carrying bamboo, charcoal, oils, salt, cloths, and groceries are plying this steam.

NINGHSIEN

Ningkiang (鄞江), entering the city from Fenghua and emptying itself into Yungkiang (甬江), with Sankiangkow (三江口) and Shihchi (石碶) on its banks, is a principal artery from Ninghsien to Fenghua, Tsuch'i, and Chenhai. The river is suitable for both steam-lannches and sail-boats.

Ch'ient'angho (前塘河) starts from Sungchaoch'iao (宋昭橋) and joins Yungkiang before passing Hengch'i (橫溪), Yunlungch'i (雲龍碶), Huhsu (湖墅), Ch'iao-ts'un (橋村), and Chenlang (陳浪). Both steam-launch and sail-boat services are maintained.

Houtangho (後塘河) flows through Paoch'uang (寶幢), Tungying (東英), Wuhsiangch'i (五鄉碶), and Shengtiench'iao (盛墊橋) and is open to both steam-launches and sail-boats.

East Chungt'angho (東中塘河) runs from east to northwest and passes Hsishu (西樹), Muchu (木槎), Yangchiak'u (楊家庫), Chiui (邱隘), and Tasung (大嵩) It is navigable throughout the year by steam-launches and sail-boats.

Nan Tangho (南塘河) owes its source from Ssumingshan (四明山) and flows parallel to Ningkiang, through Tachiao (大皎), Changts'un (章村), Ningkiangch'iao (鄞江橋), Pailiangch'iao (百梁橋), and Hengchangch'iao (橫漲橋), before joining Yungkiang. The river is suitable for both steam-launches and sail-boats.

TSUCH'I

All the rivers, except Ch'ienkiang (前江), which is navigable by steam-launches, suitable only for sail-boats. Changch'iaoho (章橋河) starts from Lich'itu (李溪渡), runs through T'ungshih (壹市), Shaochiahui (邵家滙), Kenglou (更樓), Lot'och'iao (駱駝橋), and Ch'angshih-ch'iao (長石橋), and ends at Hot'oushih (河頭市) Kuanho (官河) starts from Minghaohsiang (鳴鶴鄉), flowing eastward through Minghaoch'ang (鳴鶴場) and ends at Tunganhsiang (東安鄉), and is a principal waterway between various villages in the district. Ch'ienkiang

(前江), also known as Changtingkiang (丈亭江) and Yungkiang (甬江) in Yüyao, is an important channel connecting Tsuch'i with Yüyao, Chenhai, and Ninghsien. Important towns and villages like Changting, Chüchiu (車廐) and Panpu (半浦) are found on its banks. Houkiang (後江) runs from Changting eastward to Fengt'ien (豐田) which it joins Ch'ienkiang there. Tatsingp'u (大津浦) flows from north to south and empties into Houkiang at Huilungch'iao (匯龍橋). Yenchup'u (剡渚浦) goes from north to south and discharges into Houkiang at Anloch'iao (安樂橋). Chimingp'u (雞鳴浦), starts from Tuchuang (杜莊) and flows southward joining Houkiang at Huchiao (湖橋).

FENGHUA

Hsiench'i (縣溪) cuts right through the district, passing (大橋) and Kiangkow (江口), joining Ningkiang in Ninghsien. The river is only suitable for small boats, and cargoes carried on this river is consisted largely of charcoal, firewood, bamboo and woods. Yench'i (剡溪), lying on the northern district, flows to Chenghsien via T'inghsia (亭下) and Chik'ou (溪口). The river is plied by bamboo rafts only.

CHENHAI

Tachiakiang (大浹江) is an important river connecting Chenhai with Ningpo, via Meihsü (梅墟) and Ch'ingshuip'u (清水浦). Not only navigable by both large and small steamers and sail-boats, but lying at the mouth of the East Sea, and being an entrance to the Chekiang province the river is important in communication as well as national defence.

Hsiaochiakiang (小浹江) lying to the south of Tachiehkiang, enters Chenhai hsien from Ninghsien, passes Ts'ungch'iuchü (崇邱區), T'ungkangch'i (東港嘴) Ch'angshanch'iao (長山橋), and Hsiaokang (小港) before emptying into the Sea. Certain part of the river is very smooth, but other part is rough and rapid, plyable only by small boats. The river is also very useful to farmers for irrigation.

Yingloho (瓔珞河), lying to the south of Hsiaochiahkiang, and entire with its course within the district of Chenhai, runs through Yinglots'un (瓔珞村), Shihchiu (石湫) and Panp'uchen (半浦陳). Although the current in some part is very rapid the river is navigable by steam-launches and small boats. With many tributaries, it irrigates the fields in the whole section of Lingyen (靈巖).

Lukiang (瀘江) is found southwest of the Lingyen and traverses Tachi (大磧), and Ch'ingshuich'iao (清水橋). The river is suitable for both steam-launches and small boats, and joins Yingloho before emptying into the East Sea at Haiyen.

Chungtaho (中大河) starts from Chintsushan (巾子山) and terminates at Lot'och'iao (駱駝橋) in the northwest of Tachiakiang. After running through the city and various towns in Tungkuan (東管) and Hsikuan (西管), the river joins Chientaho (前大河). Only sail-boats are navigating the river.

Chientaho (前大河) starting from Sankangk'ou 三港口) and ending at Huilungch'iao (迴龍橋), lies northwest of Chungtaho. With its many branches, the river is not only suitable for running sail-boats, but is the principal source for irrigating fields in Tungkuan and Hsikuan.

Hsitaho (西大河) runs from Lot'och'iao (駱駝橋) and stops at Ninghsien, and is the principal line of communication between the towns of Hsikuan in Chenhai. It empties into Chientaho, and is suitable for sail-boats. Like Chientaho, it has many tributaries and is used for irrigation purposes.

TINGHAI

Being an island Tinghai is isolated from other districts, and depends on the sea for means of communication. There are now 7 regular lines of steamers service calling at this district. The Shen-T'ai line (申台綫) with five steamers running between Shanghai and Linan once a week, is the principal route from Tinghai to Shanghai or Taichow. The Shen-Wen line (申溫綫), running between Shanghai

and Yungchia once a week connects Tinghai with Shanghai and Yungchia. The Ning-Tai line (甯台綫), starting from Ninghsien and ending at Linan, with two steamers running once every ten days, connects Tinghai with the two districts just mentioned. The Ning-Wen line (甯溫綫), from Ninghsien to Yungchia, touches Tinghai, three steamers being put in service once a week. The Ning-Hsiang line (甯象綫) with three ships provides steamer service running from Ninghsien to Hsiangshan calling at Tinghai once every three days. The Ning-Tai line (甯台綫), joining Ninghsien with Taishan (岱山), shops at Tinghai, twice a week. The Ning-Tai line (甯定綫), not only joins Tinghai with Ningpo by steamers, but calls the scenic and sacred spot of P'ut'o (普陀) once every other day. In addition to the lines mentioned above there are many others connecting important points of the hsien. One steamer calls at Wangchiatun (王家墩), Tienlochih (田螺峙), Pingyangpu (平陽浦), Shenchiamen (沈家門), P'ut'o, and Taohua (桃花) once a day, another runs between Tinghai and Liuhenghsiachih (六橫蝦峙) once a day, and a third one passes through Wangchiatun, Tienlochih, Pingyangpu, Chenchiamen, P'ut'o, Lomen (螺門), Taishan (岱山) every day.

HSIANGSHAN

The Hsiang-Ning steamer line (象甯綫) runs from Hsiangshan to Tinghai, Chenhai and Ningpo, via Hsichou (西周), Hsiach'en (下沈), Ch'iangt'ou (牆頭), Paitun (白墩), Hengch'i (橫溪), and Chuch'i (珠溪). There are three steamers now plying the route carrying passengers and goods, the more important being cloths, pongee, livestocks, poultry, and grains. The entire length of this line is 170 kilometres, and the section within Hsiangshan is 68 kilometres.

The Hsiang-Shih line (象石綫) is the principal line of communication between Hsiangshan, Shihp'u (石浦) and Nantienhsien. Steam-launches running on this line call at Haop'u (鶴浦), Hsingt'ang (星塘), Tashutun (大樹墩), Fouch'iaotu (浮橋渡), and Chungi (中岐)

once a day. The line has a total length of 68 kilometres, of which 57 kilometres is within the hsien limit of hsiangshan. Goods transported on this river consists chiefly of fish and livestocks.

NANT'IEN

In the district of Nant'ien there is only one important river. The Fanhaoho (樊鶴河), which starts from Fanyaochen (樊岙鎮), terminates at Haop'uchen (鶴浦鎮), covering a distance of 7 kilometres, navigable by steam-launches and small boats, carrying passengers and goods. The bulk of goods transported consists of kerosene, wine, and straw.

SHAOHSING

The Grand Canal and Shuangch'iho (雙溪河) are the two important rivers in Shaohsing. The Grand Canal enters from southeast to Shaohsing city flowing northwestward covering a distance of 65 kilometres. Both passenger and freight traffics are heavy on this river, steamers and sail-boats taking every day over 500 passengers and 1,000 pieces of cargoes, the latter consisting mostly of cloth and miscellaneous goods. Steamers stop at Tungkuan (東關), T'aoyen (陶堰), Kaopu, (皋埠), Shaohsing city, K'och'iao (柯橋), Ch'iench'ing (錢清), Hsiaoshan, and Hsihsing (西興), where wharf facitities are available. The Shuangch'iho, 23 kilometres long, runs from south to north passing the city of Shaohsing and P'ingshuichen (平水鎮), and is the trunk river connecting Shaohsing with Hengch'i (橫溪). Steam-launches and sail-boats carry many passengers and 100 pieces of cargoes daily on this river.

HSIAOSHAN

The Puyangkiang (浦陽江) enters Hsiaoshan from Chuch'i and empties into the Ch'ient'ang River. The part within the hsien borders is 29 kilometres long, with Linp'u (臨浦), Hsinpa (新壩), and Ich'iao (義橋) on the banks. Both steam-launches and sail-boats are plying the river.

The Grand Canal also forms the principal channel linking Shaohsing with Hsiaoshan, although that part in the hsien is only 26 kilometres long. On its banks are found the city of Hsiaoshan, Yach'ien (衙前), and Ch'iench'ing (錢清). Steam-launches, sail-boats are chief crafts on the river.

The Hsihsiaokiang (西小江) covers a distance of 9 kilometres, from Linp'uchen (臨浦鎮) to Ch'iench'ingchen (錢清鎮) and finally empties into the Grand Canal before passing through Sochien (所前), Kiangchiao (江橋), and Yanghsunchiao (楊汎橋). Navigable by steam-launches, sail-boats, and rowing boats, the river is the important waterway between the southwestern part of Hsiaoshan and Shaohsing.

Entering from Fuyang hsien and flowing through Wenyen (閘堰), Hsihsing (西興), Hsiaossupu (小泗埠), and Sanch'atai (三叉埭) before coming to the boundary of Shaohsing and Haining, the 73.75 kilometres of Chientang river (錢塘江) in Hsiaoshan is a very important waterway in the district, because it is the only route connecting the Shanghai-Hangchow railway with Hangchow-Kiangshan railway, Hsiaoshan-Shaohsing highway, and Shaohsing-Ts'aoê-Ch'enghsien highway. The current is a little more rapid than many other rivers in the province, especially so when it is at high tide. Steam-launches and sail-boats are means of communication on the river.

Choukouch'i (洲口溪) enters from Fuyang and empties into Puyangkiang after covering a distance of 30 kilometers in the Hsiaoshan hsien. Important villages and towns found on its banks are T'ients'un (田村), Changshusiats'un (樟樹下村), and Yunghsingch'iao (永興橋).

CHUCH'I

The Puyangkiang forms an important waterway not only in the Hsiaoshan hsien, but also in Chuch'i, running from Chuch'i and emptying into Chientang River in Hangchow passing Anhuachen (安華鎮) and Yaokungpu (姚公埠) The river in the district is 95 kilometres long, and is many places silted making navigation difficult. Both

small steam-launches and sail-boats are now running on the river, and agricultural produce forms the chief important cargo carried on the river. Since the inauguration of the Hangchow-Kiangshan railway this river has lost considerable importance.

YUYAO

Yaokiang (姚 江), 33 kilometres in length in Yüyao, is the most important river in the district, by which Yüyao is connected with Ningpo in the east and Shangyü in the west. The Yüyao-Ningpo route starts from Yungen (永 恩) and ends at the border of Hsiaoshan and Tsuch'i, maintaining both steam-launch and sail-boat services, the former running once a day and the latter three times a day. Goods transported are lardgely cotton, silk, salt, the timber. The Yüyao-Shangyu line starts from Yungen and terminates at Hsiehchiach'iao (謝家橋) Steam-launches and sail-boats regularly carry passengers and cotton, silk, salt, timber, and lawns up and down the river.

Machuhengho (馬渚橫河) running between Machuchen (馬渚鎭) and Henghochen (橫河鎭) is a little over 11 kilometres long, and navigable by said-boats only. Salt is the important goods transported on the river.

Ch'anglengkang (長冷港) rises from Chungfulu (中府路) and joins Machuhengho at Houyen (後堰) and is 19 kilometres long in the district. Cotton and timber form the important goods transported on the river.

Tatangkang (大塘港) covers a distance of 39 kilometres in the district and flows from Huangshankang (黃山港) to Shuanghoch'iao (雙河橋) in Tsuch'i. Tea is the chief article transported on this stream.

Lanyehkang (蘭野港) covers a distance of 10 kilometres from Poling (破嶺) to Chusankang (竹三港) where the rivers empties into Yaokiang. Sail-boats and other crafts carry on this river cotton and rice besides passengers.

Tunghengho (東橫河) rises from Huangshanchiao (黃山橋) and stops at Shuanghoch'iao (雙河橋), with a length of 32 kilometres. Large quantities of timbers are transported on the stream.

Fenshuikangshui (分水岡水) starts at Fenshuikang (分水岡) and ends at Chouchiapu (周家埠), emptying itself into Kuanch'uanpu (官船浦). The river is plied by sail-boats carrying passengers and cargo, the latter consisting chiefly of salt.

SHANGYU

More important rivers in Shangyu are the Ts'aoê River and its branches, such as Ssushihliho (四十里河), Tungming River (通明江), and Machuhengho River (馬渚橫河). There are six lines of sail-boat service as follows:—

The Yu-Ma line (虞馬綫), daily "express" sail-boat service between the city of Shangyu and Machu (馬渚) via Hsiehchiachiao (謝家橋); 26 kilometres in length.

The Yu-Liang line (虞梁綫), the only route joining Shangyü with Shanghai, Hangchow, Shaohsing and Ningpo, daily sail-boat passenger and freight service between the city of Shangyü and Lianghuchen (梁湖鎭), with a length of 17 kilometres; groceries, rice and wheat forming the chief cargoes.

The Yü-Yao line (虞姚綫), 34 kilometres long, an important line of communication between Shangyü and Yüyao, with Hsiehchiach'iao and Anchiatu (安家渡) on its way; both steam-launch and sail-boat services for passengers and cargoes, the latter consisting chiefly of groceries, rice, wheat, etc.

The Pai-Sung lien (百崧綫), 17 kilometres, cutting right through the city with Pokuan (百官) and Sunghsia (崧廈) as the two terminals, daily "express" sail-boat service.

The Sung-Hai line (崧海綫), covering a distance of over 11 kilometres from Sunghsia to Lihai (澥海), daily "express" sail-boats service.

The Pai-Wu line (百五綫), connecting Pokuan with Wufu (五夫), with a length of 20 kliometres, daily "express" sail-boat service.

CH'ENGHSIEN

The section of the Tsaoê River in Ch'enghsien is known as Yenchi (剡溪), and is almost the only important river in the district. The stream in Ch'enghsien starts from the East Gate of the city passing Sanchiehchen (三界鎮) and Sungpachen (嵩壩鎮) and ends at Pokuan, covering a total length of 87 kilometres, and leading further to Shaohsing and Shangyü. Passengers and freights, containing largely groceries, imported goods, tea and cocoon, are carried by sail-boats.

HSINCHANG

Chienkang (前港), connecting Hsinchang with Ch'enghsien via Sanch'i (三溪) is 20 kilometres in length that section lying within this hsien being 14.40 kilometres long. Only bamboo rafts are used for carrying cargoes, the most important being tobacco and tea, as at low tide the stream is too shallow to be navigable.

LINHAI

Entering the district from Haimen and cutting the district right through, Ling Kiang (靈江) is a short but important river in Linhai, with a length of 59 kilometres. Daily steam-launch service between Haimen and the city, via Chiachih (葭芷), Yungch'uan (湧泉) and Tat'ien (大田), is maintained.

Shihfengchi (始豐溪), 36 kilometres long in Linhai, is the principal river connecting Linhai with T'ient'ai. Only small sail-boats are plying in the river, and there are quite a large number of ships carrying goods consisting chiefly of firewood, charcoal, timber and tea.

Yunganchi (永安溪), with 24 kilometres long lying in the district, is the important river connecting Linhai with Hsienchü and is navigable only by small sail-boats.

HUANGYEN

More important streams in Huangyen hsien are nine in number. The Yungningkiang (永甯江) lies in the centre of the district and there are two lines of steam-

launch service running on the river. The Huangchiao line, (黃椒綫), starting from Huangyen and ending at Haimen, via Sankiangk'ou (三江口) and Chiachih (葭芷) is 30 kilometres in total length. Steamers from Huangyen to Shanghai and Ningpo run once a week, and those from Huangyen to Haimen once a day. Goods transported on this line are oranges, bamboo shoots, rice, and daily necessities. The Huang-Chi line (黃際綫) maintains steam-launch service between the city of Huangyen and Ch'aochi-chieh (潮際街) via T'outach'iao (頭大橋), Sankuant'ang (三官堂) and K'angshan (亢山). The line is 60 kilometres long and forms the chief artery between the city and neighboring towns and villages. Daily steam-launch services for passengers and cargoes are maintained, the latter consisting chiefly bamboo, woods, firewood, charcoal, rice, salt, and other daily necessities.

Nankuanho (南官河), lying in the southeast part of the city, is the principal waterway between the towns and villages in southeastern Huangyen. Two steam-launch lines and sail-boat service are maintained. The Lu-Tsê line (路澤綫) starting from Luch'iaochen (路橋鎮) touching Paifengch'iao (白楓橋) and ending at Tsêkuochen (澤國鎮) is 8 kilometres long and both steam-launch and sail-boat service are being operated. Bamboo, woods, rice salt and daily necessities form the bulk of goods transported on this river. The Huang-Tsê line (黃澤綫) connects the city of Huangyen with Tsêkuochen and is the principal line of communication between the city and neighbouring villages and towns. On this line only sail-boat service is operating.

Ch'inglungpu (青龍浦) provides an intercourse between Luchiao and Chinch'ingkang (金清港) via Ch'uan-ching (泉井), Yangfumiao (楊府廟) and Nanhsinshih (南新市), covering a distance of 20 kilometres. Small sail-boats are employed for carrying both passengers and cargoes, the latter usually consisting of rice, salt, etc.

Tungkuanho (東官河), on which is operated a sail-boat line from Luch'iao to Sankiangk'ou (三江口) through

Tungshant'ou (東山頭), and is an important river in the eastern part of Huangyen. The river is nagivable by small-sail boats only and rice and salt form the chief articles transported on the river.

The Tungkuan Branch, on which sail-boats are running between Luchiao and Haimen, via Hungchiach'ang (洪家場) and Henghochen (橫河鎮), covering a total length of 25 kilometres, with 15 kilometres lying in the district of Huangyen. Rice forms the chief article transported on the line.

Sants'aiching (三才涇), the principal line of communication between Hsinho (新河) and Haimen, via Hsialiang (下梁), Hengt'ang (橫塘), and Henghochen (橫河鎮). The whole line is 25 kilometres long, 20 kilometres lying in the district. Goods transported on this line are the same as on the Tungkuanho Branch.

Chienyanghu (鑑洋湖), on which is operated the Lu-Yuan line (路院綫), from Luch'iao (路橋) to Yuan-ch'iao (院橋), covering a total distance of 20 kilometres, is an important waterway in the southern country of the district. In addition to the goods similar to those transported on the two rivers mentioned before fire-wood is another important article carried by small boats on the river.

Hsinch'iaopu (新橋浦) forms an important waterway between Luchiao (路橋) and Hsinho (新河) in Wenling, via Shihchu (石曲) and Hsinkuanchiao (新官橋). Small boats are running between the two points carrying passengers, stone slabs, and daily commodities.

Chouyangpu (週洋浦), on which is maintained the Tsê-Chin sail-boat line (澤金綫) connecting Tsêkuochen with Chinch'ingkang (金清港) via Chüentungch'iao (捲洞橋), Shangt'angchueh (上塘角) and Hsiat'angchueh (下塘角), a distance of 20 kilometres, is navigable only by small sail-boats carrying passengers and cargoes, the latter consisting chiefly of sea foods, salt and other daily necessities.

NINGHAI

Ch'eng-Ch'en Line (城甓綫). This line starts from the city of Ninghai and terminates at Hsiaoyuanshan (小圓山), via Huangtun (黃墩). Sail-boats carry passengers and cargoes, among which, sugar, beans, and rice are the largest items. The length of this line is 26 kilometres.

Chü-Ch'ang Line (車長綫).—Starting from Chüyaokang (車岙港) and terminating at Changchieh (長街) the line is 13 kilometres long and is the principal waterway between the two points. The regular sail-boat sails 30 times a month, calling at Paich'iaop'ing (白喬坪) and Ch'angchieh (長街), carrying passengers and goods, which consists of firewood, rice and vegetables.

Hai-Shih Line (海石綫)—On the Haiyukang (海游港) is maintained a steamer service running once every other day between Haiyuchen (海游鎮) and Shihp'u (石浦), Hsianghan. Although the line is only 7 kilometres long it is an important channel between busy towns in Ninghai and Hsiangshan.

Ning-Ning Line (寧鄞綫).—Covering a distance of 114 kilometres between Ninghai and Ninghsien, this steamer line is the longest one in the district. A return trip by steamer can be completed in three days, calling on its way at Hsuehyaopu (薛岙埠).

Ning-Chien Line (寧健綫).—The line on Chient'iaokang (健跳港) between Ningpo and Shanmenwan (山門灣), a length of 23 kilometres known as the Ning-Chien Line. Only sail-boats are used on the line for transporting passengers and cargoes consisting chiefly of firewood, rice, oils, and salt.

WENLING

Chinch'ingkang (金清港).—This river, lying in western section Wenling with a length of 33 kilometres in the district, is an important artery connecting many districts, passing Hsinho (新河), Tachi (大溪), Shenchiao (沈橋) and Hsiatangchüeh (下塘角) in the districts. Both steamers and sail-boats are plying the river carrying passengers and rice, corn, cereals, and stone slabs.

Tachi (大溪).—Covering a distance of 13 kilometres from Tach'ichen (大溪鎮) to Paip'uch'iao (白蒲橋) and emptying into Chinch'ingkang, Tachi flows through Panlangch'iao (潘郎橋), Chingchingkow (淨涇口) and is an important waterway in north Wenling. Sail-boats as well as steamers are carrying passengers and transporting rice and cereals on this stream.

Yüehho (月河).—Running between Meiling (梅嶺) and Wuyüshih (鶩嶼市) via Henghoch'iao (橫河橋) and Hengfengch'iao (橫峯橋), a distance of 15 kilometres in the northeastern section of the district, Yüehho is a main inter-village waterway. Between these two terminals, steam-launches carry passengers, and sail-boats carry rice, corn, cereals and stone slabs.

Wenlingho (溫嶺河).—By this river Wenlingchen (溫嶺鎮) is connected with Louch'ich'iao (樓棋橋).

The Grand Canal.—The section of the Grand Canal in Wenling starts from Fuyangcheng (復洋鄭), passes Hsiamaoch'iao (下冒橋), Johengchen (若橫鎮), Chaochiach'iao (趙家橋), and Hot'ouchen (河頭鎮), and terminate at Hsint'angcha (新塘閘), a distance of 24 kilometres. Both steamer and sail-boat services are being operated on the river, carrying passengers and shipping goods such as rice, cereals, and stone slabs between the points mentioned.

T'IENT'AI

Shihfengchi (始豐溪).—Rising from Tungyang and terminating at Ninghai the Shihfengchi enters T'ient'ai at Chuantungch'iao (捲洞橋), passing Chieht'ou (街頭), P'ingchen (平鎮), and the city and ending at Tungpehch'at'an (東北茶潭). It is the most important river in the district, covering a distance of 68 kilometres but, with a rocky bed, is navigable only by sail-boats for carrying passengers and cargoes. Tea, charcoal, cordage, beancakes, kerosene, and cotton piece-goods form the bulk of goods transported on this water route.

Fuchi (福溪).—Rising from the western side of the T'ient'ai mountains (天台山) and entering Ninghai at Tungwan mountains (東灣山), after passing through

Shihliangch'iao (石梁橋), Shengchishan (聖蹟山) Wu-ch'ik'ou (烏溪口), and Taaoshan (大嶅山), the Fuchi lies in the northern section of the district, and is 16.5 kilometres long.

Hunshuichi (混水溪).—With its source found on the southeastern side of T'ient'aishan, this river passes T'ien-fengssu (天封寺), Maop'engts'un (毛蓬村), Chihsiats'un (溪下村), and after flowing for 11.5 kilometres, terminates at Tsoshihyen (坐視岩). Through this river Ninghai is also accessible.

Yungch'i (泳溪).—The Yungch'i has its source at Ts'angshan (蒼山), and after flowing through Yangyao-keng (楊否坑), Yangt'ienhu (仰天湖), Yungchichieh (泳溪街), Yenhsia (岩下), and Fangts'un (方村), stops at Tienningtang (天甯堂). The section of the river in the district measures 15 kilometres long, and is not quite safe for navigation, because there are reefs on the river-bed. Through this river Ninghai is connected with T'ien-t'ai.

HSIENCHU

Yunganch'i (永安溪).—Yunganch'i is almost the only important river in Hsienchü, and regular sail-boat service, known as the Lin-Hsien line (隣仙綫), run from Hengch'i (橫溪), via P'ant'anchen (皤灘鎮), Hengch'ichen (橫溪鎮), Changtu (張渡), Hsienchü city terminating at Paishiuyangchen (白水洋鎮) in Linghai. The part of the river in the district is 94 kilometres long, and with a rough bed and a depth of only about one metre, sail-boat is the only kind of vessel plying the river, carrying both passengers and goods. The bulk of goods transported consists of firewood, charcoal, groceries, salt and cotton piece-goods.

CHINHUA

Chinhuakiang (金華江).—This river enters Chinhua from Iwu, in which district the river is known as Iwukang (義烏港), while in Tungyang as Tungyangkiang (東陽港), Although the section of the river in the district is only 46 kilometres long, it is the important artery between

Chinhua and the Lankiang (蘭 江) and Chientang valleys. It passes many important towns and villages like Tit'ienshih (低田市), Yenchiat'an (嚴家灘), Ch'inshanchiao (琴山脚), Tungch'ikou (東溪口), Choulits'un (周李村), Ch'ikouts'un (溪口村), Shuangkangk'ou (雙港口), P'anchiats'un (潘家村), and Paishach'ikou (白沙溪口). Sail-boats are the chief means of communication on the river.

Meichi (梅 溪).—The Meich'i is a branch of the Chinhuakiang, with 28 kilometres lying in the district, and is an important waterway between Chinhua and Wui. Being very shallow the river is only navigable by sail-boats.

LANCH'I

Lankiang (蘭 江).—Lankiang is the principal river in Lanch'i, being a branch of Chê River. By this river Chienteh, T'unglu, Shaohsing, and Hangchow are connected with Lanch'i. From Lankiang flows two branches, the Ch'ükiang (衢 江) and Wukiang (婺 江), through the former, Lungyu (龍 游) and Chuhsien are brought together, and through the latter Chinhua is accessible. The length of Lankiang in Lanch'i is 23 kilometres, that of Ch'ükiang 11 kilometres and of Wukiang 12 kilometres. Important towns on these rivers are Yulungfu (游 龍 埠), Nüpuchen (女 埠 鎮), and Choushangchen (洲 上 鎮). Sail-boat services for passengers and freights are available. Foodstuffs and hams are the chief articles transported on the rivers. Since the completion of the Hangchow-Kiangshan railway and the opening of Chu-Lan Highway, waterways in Lanch'i are not so important as before.

TUNGYANG

Tungyangkiang (東 陽 江) is the only important river in Tungyang and before the completion of the motor highway this river was the main channel leading to Iwu, Chinhua and Lanch'i. With plenty of reefs and rapid current it is navigable only by bamboo rafts, which are used for carrying ham and bacon for export, and importing pigs, feathers, fertilizers, and groceries. The section of the river lying in the district is 23 kilometres long.

IWU

Tungyangkiang (東陽江), which traverse Iwu for a distance of 23 kilometres, join the district with Tungyang, Chinhua, and Lanch'i. Important points like Hochai (何宅), Hsialochai (下駱宅), Iwu city, Kiangwan (江灣) Fot'ang (佛堂), and Tit'ien (低田) are found on the banks of the river. Bamboo rafts are used for travelling between Tungyang and Fot'ang, while from Fot'ang to Lanch'i sail-boats as the chief crafts. Principal imports into the district are timbers and bamboo shoots, and exports, brown sugar and rice.

YUNGK'ANG

Yungk'angkang (永康港) is the only principal stream in the district, with a length of 37 kilometres. By this river Wui and Chinhua is connected with Yungk'ang, via Ch'int'ungchen (琴桐鎮). Being very shallow the river is only navigable by sail-boats and bamboo rafts during the spring and summer. Imports and exports by this river consist largely of kerosene, sugar, cotton piece-goods, oils, hams, fertilizers, and timber.

WUI

The Wuikang, (武義港) known as Yungk'angkang and in Yungk'ang as Meich'i in Chinhua, forms the connecting link between these three districts. The course of the river in this district is about 29 kilometres long and passes Lit'an (履坦), Yehch'angpu (葉長埠), and Chiaoyen (礁岩). The river is navigable by sail-boats and bamboo rafts, and considerable quantities of kerosene, rice, cotton piece-goods, charcoal and bamboo are transported on this route.

P'UKIANG

Although a connecting link between the city of Pukiang and Chuch'i and passing some important rural sections like Wangchai (王宅), Paimach'iao (白馬橋) and Chiehp'ai (界牌), the Puyangkiang (浦陽江) is only navigable by bamboo rafts, throughout the entire course of 47 kilometres owing to its shallowness and presence of reefs.

That section from the city to Wangchai is navigable only in spring, summer and winter, while the remainder of the river is open all the to traffic year round. Goods exported through this river are tea, hams, timbers, wood oil, preserved dates, and silk thread, while those imported are salt, imported cotton piece goods, kerosene, fertilizer, paper, tinfoil, cotton yarn, soap, cigarettes, matches, iron and sugar.

T'ANGCH'I

Although there is only one principal river in Tangch'i, Ch'ükang (衢 港) connects Chekiang with Kiangsi and Fukien. The river, 10 kilometres long in Tangch'i, passes the hsien city, Chungchow (中 洲), Lofu (羅 埠), and Yangfu (洋 埠), thence entering Lanch'i and emptying into Lankiang. Only sail-boats are used as means of communication, because there are many sand banks.

CH'UHSIEN

Chukang (衢 港).—Entering the hsien from Lungyu and after running for 30 kilometre, Chukang divides itself into two branches, the Changshankang (常 山 港) and the Kiangshankang (江 山 港). The Chükang connects Chuhsien with Lungyu, T'angch'i and Lanch'i, where it joints the Lankiang passing important points like Yingchuen (盈 川) and Changt'an (漳 潭). Only sail-boats are used for carrying passengers and goods, the latter containing largely groceries, paper, timber, rice, wheat, tobacco, salt, and imported goods.

Ch'angshankang (常 山 港).—Changshankang, so called because it reaches Ch'angshan, is the principal waterway between the two hsien, and is 17 kilometres in length in Chühsien with Hangpu (航 埠) and Kouch'i (溝 溪) on its banks. The stream is navigable by sail-boats, and goods transported on the water are almost the same as those on Ch'ükang.

Kiangshankang (江 山 港).—This river, branch of Ch'ükang, traversing Kiangshan hsien, is the main river connecting Chühsien with Kiangshan. Throughout the

whole course of 17 kilometres sail-boats are conveying rice, wheat, timber, groceries, paper, tobacco, salt, and imported goods between various points in those two hsien.

LUNGYU

Running through T'angch'i and Lanch'i, where it joins the Lankiang, and C'hühsien, the Ch'ükang (衢 港) is the important artery between Lungyu and the three districts. In spite of the length of the river and the many important points on its banks, like Huchen (湖 鎮) and the city of Lungyu, it is not much used for navigation owing to its rapid current. Paper, rice, and cereals are some of the important goods transported on the river. Lingshankang (靈 山 港), another branch of Chükang, connects Suichang with Kuani (官 驛) via Ch'ik'ou (溪 口) and Lungyu city, of a length of 45 kilometres. The current being rapid, only sail-boats and bamboo rafts are used for conveying passengers and cargoes of the latter paper being the most important.

KIANGSHAN

Wench'i (文 溪), another name for Kiangshankang in Kiangshan hsien, empties into Ch'ükang (衢 港) in Ch'ühsien after running 82 kilometres through Chinghu (清 湖) the Kiangshan city, and Tach'it'an (大 溪 灘). As the current is very rapid, even sail-boats run with difficulty when against the tide. Oil, paper, bamboo and timber form the principal goods transported on the river.

CH'ANGSHAN

Entering from K'aihua and traversing Ch'ühsien, Ch'angshankang is a branch of Chukang and is also known as Machinch'i (馬 金 溪). Although the current is rapid, it is an important line of communication between Ch'angshan, Ch'ühsien, and K'aihua, sail-boats carrying passengers and goods consisting of brown sugar, vegetable tallow, tung oil, and timber from one district to another, via P'oshihchen (磧 石 鎮), Ch'angshan city, and Chaohsienchen (招 賢 鎮). The section of the river lying in Ch'angshan is 51 kilometres in length.

K'AIHUA

Coming from Ch'angshan and flowing into Chukang, Machinch'i forms the connecting link between K'aihua, Ch'angshan, and Chühsien. The river is so called, because its source is at Machinling. It pass Machinchen (馬金鎮), K'aihua city, and Pipu (筆埠), leaving the district at Shangchiehshou (上界首), a distance of 62 kilometres. Only sail-boats are plying the river conveying kerosene, salt, tung oil, vegetable tallow to various places.

CHIENTEH

Chililung (七里瀧).—Being a section of Chê River in Chienteh, of a length of 41 kilometres, the Chililung flows through Penpots'un (坌柏村), Hanchiawu (韓家塢) Ch'ik'ou (溪口), T'anghsia (灘下), and Tungkuan (東關) steamers and sail-boats are running between Chienteh and T'unglu.

Hsinankiang (新安江).—Through Hsinankiang, a branch of Chililung, also known as Huikiang (徽江), Shunan and Huichow in Anhui are accessable. Although the section of the river in the district is only 21 kilometres long, it flows through many important points on the banks including Shihlipu (十里埠), Hsiayenpu (下岩埠), Yang-ch'ichen (洋溪鎮), and Lotungpu (羅桐埠), and is navigable by both sail-boats and steam-launches, carrying passengers between Chienteh and Shunan, and cargoes consisting chiefly of confectionary, timber, tung oil, and varnish.

Lankiang (蘭江).—Running from Chienteh to Lan-ch'i where the river is divided into two branches, one going to Ch'ühsien and the other to Chinhua, the section of Lan-kiang in Chienteh is 24 kilometres long, and navigable by steamers and sail-boats, despite its rapid current. Timber and cereals are the important products transported on the river.

SHUNAN

Hsinankiang (新安江).—Entering the district at Chichp'ai (界牌) the Hsinankiang passes Hsihsien (歙縣)

Weipingchen (威坪鎮), Niushihts'un (牛石村), Shunan city and Kangk'ouchen (港口鎮), Ch'ayuanchen (茶園鎮) and Ch'ink'engts'un (芹坑村), the largest river in the district, being with a length of 74 kilometres. The rapid current and rocky bed of the river makes navigation difficult, and sail-boats are the only craft carrying tea and tung oil and passengers from Shunan to Chienteh.

Shukouch'i (蜀口溪).—This stream is branch of Hsinankiang, and is 36 kilometres long between Yüchiats'un (俞家村) and Weip'ingchen (威坪鎮), navigable only by bamboo rafts.

Yunyuanchi (雲源溪).—Starting from Kuanchiats'un (管家村) and ending at Shihts'un (史村) via Huts'un (胡村), Tungts'un (童村), the Yunyuanchi is an important inter-village stream in Shunan. Bamboo rafts are almost the only means of communication for carrying passengers and cargoes, the latter consisting chiefly of tea and tung oil.

Tungch'i (東溪).—Covering a distance of 74 kilometres from K'uihsingch'iao (奎星橋) to Tungch'ichen (東溪鎮) the Tungch'i is a link between various towns and villages with bamboo rafts regularly plying the stream.

Shuiangkang (遂安港).—This river flows from Hupients'un (湖邊村) to Kangk'ouchen (港口村) and leads to Shuian. Although it is only 12 kilometres long and navigable by bamboo rafts, it connects many important towns with villages.

Chinch'i (錦溪).—Stretching over a distance of 36 kilometres from Hengch'uan (橫川) to Hsiaoch'its'un (小溪村), the Chinch'i is the principal waterway between towns and villages of the hsien. Bamboo rafts are employed to carry tea and tung oil.

T'UNGLU

Tungkiang (桐江) forms the link between Tunglu and Chienteh, Fuyang, and Hangchow, on which line are found important points as the city of Tunglu and Chaich'ichen (窄溪鎮). The part of the river in the district is 32 kilometres, long, and although with many sand shoals it is

navigable by steamers and sail-boats, the former carrying passengers leaving the city twice a day, while the latter transport goods on the river consisting chiefly of rice, grain, piece goods, firewood, charcoal and imported goods. If a steamer is chartered for conveying goods, the usual price from Tunglu to Hanghsien is $200.

Hengkang (橫 港).—Owing to its accessibility to Fenshui, Hengkang is also known as Fenshuik'ang (分 水 港). It empties itself into T'ungk'iang after passing Chiuhsienchen (舊 縣 鎮) and Hengts'unchen (橫 村 鎮) The river is navigable by sail-boat only, carrying rice, grains, piecegoods, firewood, charcoal and imported goods.

SHUIAN

Wuch'iangch'i (武 強 溪) is almost the only important river in Shuian, which lies in the middle part of the hsien of a length of 33 kilometres long. It is also known as Shuiankang (遂 安 港), and forms the principal waterway connecting Shuian with Shunan. With rapid current and rocky bed, the river is navigable only by rafts for conveying both passengers and cargoes. Exports from the district consist chiefly of tea, paper, and soya-beans, and imports consist largely of piece-goods, keresone, and miscellaneous goods.

FENSHUI

Shouch'angch'i (壽 昌 溪), with its source at Pailop'ing (百 籮 坪) and emptying into Hsinankiang on the boundary of Chienteh and Shouch'ang, is the river connecting the district with neighbouring cities, towns, and villages. Throughout the entire course of 65 kilometres, bamboo rafts are used as means of communication, calling at Tat'ungchen (大 同 鎮), Shouch'ang city, and Kenglouchen (更 樓 鎮). Rice, grain, and salt are the three important commodities transported on the river.

FENSHUI

Fenshuik'ang (分 水 港).—Entering from Yüts'ien, the Fenshuikang, also known as Tienmuch'i (天 目 溪) is the connecting link between the two hsien and T'unglu. The

river flows over a distance of 28 kilometres passing Yinchupu (印渚埠) and Pip'uchen (皮浦鎮). Regular sail-boat leaves Fenshui and T'unglu once a day, carrying passengers and cargoes. Tung oil, charcoal, tea, and water chestnut are the most common commodities carried on this river.

Paichiangch'i (百江溪).—Lying in the western part of Fenshui the Paichiangch'i flows through Shaoshêpu (邵舍埠) and Huangshant'ou (黃山頭), covering a distance of 38 kilometres. Bamboo rafts are used for conveying passengers and goods.

YUNGCHIA

Oukiang (甌江).—Entering the district from Ts'ingt'ien and emptying into the East Sea, Oukiang is a very important river in Chekiang. With many tributaries forming a network throughout districts, on the river are operated several lines of steamer and sail-boat service, all radiating from Yungchia, as follows:—

The Yungts'ing line (永青綫), between Yungchia and Ts'ingt'ien; charging 50 cents a passenger;

The Wenyung line (温甬綫), connecting Yungchia with Ningpo; the fare ranging from $1.50 to $3 each;

The Wentai line (温台綫), linking Yungchia with Linghai, the fare being $2 per passenger for the fifirst class, $1 for the second class and 80 cents for the third class;

The Ouhu line (甌滬綫), between Wenchow and Shanghai, the fare for three classes being $8, $6 and $4 respectively.

T'angho (塘河).—T'angho is a branch of Oukiang, traversing Tangtungts'un (塘東村), Paihsiangts'un (白象村) and Tanghsiachen (塘下鎮), and is the principal artery between Juian and Yungchia. The whole course of 17 kilometers in the district is navigable by steam-launches as well as sail-boats.

JUIAN

Feiyunkiang (飛雲江).—Entering Juian from Taishun and joining the sea at southeast the Feiyungkiang is an important river between these two hsien. Small steam-launches and sail-boats are plying between the city of Juian and P'ingyangkeng (平陽坑), and Paichang'kow (百丈口) carrying passengers and cargoes, consisting chiefly of firewood, charcoal, and agricultural products.

T'angho (塘河).—This river starts from the East Gate of Juian and terminates at the South Gate of Yungchia after running through Huachêng (華陵), T'anghsia (塘下), and Wuyen (梧延). The river is plied by sail-boats and small-launches, the latter running four times a day from Juian to Yungchia. There are now three steam-launch companies maintaining regular services. Aquatic and agricultural products and imported goods form the principal cargoes transported on the river.

LOTS'ING

Hsihsiangho (西鄉河).—The Hsihsiangho is the important waterway for Lots'ing, of a length of 34 kilometres and joins the city of Lots'ing with Kuant'ou (館頭) via Liushih (柳市), and Paihsiang (白象). A steam-launch service known as the Yo-kuan line (權館綫), runs twice a day, and sail-boat is another craft plying river.

P'INGYANG

Aok'iang (鰲江).—Rising from South Yentangshan (南雁蕩山) and emptying into the Sea after covering a distance of 66 kilometres, Aokiang connects P'ingyang with Foochow and Shanghai by two steamer lines. The Minao line (閩鰲綫) starts from Kuaotow (古鰲頭), calls at Chenhsiakuan (鎮下關), Shachen (沙埕) Sansha (三沙), and Hwangchi (黃岐), and stops at Foochow. Pigs, sheep, chickens, eggs, candies, alum, cereals, piece-goods, silk textiles and miscellaneous goods form the principal cargoes.

The Huao Line (滬鰲綫) starts from Kuaot'ow, and passes Juian and Chumen (楚門), and ends at Shanghai.

Regular steamship service is operated on this line three times a month. Alum, cattle and other animals, and cereals form the chief exports and silk and cotton piece-goods are principal imports.

Peimenho (北門河).—This river starts from the northern part of P'ingyang and passes Mingshan (鳴山), Kuanyint'ing (觀音亭), and Juian. The whole river is 17 kilometres long and the section lying in P'ingyang is 11 kilometres. Steams launches are running between the two districts, carrying passengers.

P'onanho (坡南河).—Starting from southern part of P'ingyang the P'onanho is an important tributary of the Aokiang and is 14 kilometres long. Steam-launches run up and down the river six times a day.

T'AISHUN

Hsienchüch'i (仙居溪) is almost the only important river in the T'aishun, starting from Pehk'engshan (北坑山), traversing Juian (where it is known as Feiyun-kiang) and emptying into the Sea, covering a distance of 59 kilometres within the limit of the hsien. It is navigable by sail-boats, which run between the two districts six times a month. Important points along the stream are Paichang (百丈) and Chüwanhsiang (車渡鄉). Paper, charcoal, fish and groceries are the principal products carried on the river.

YUHUAN

Being surrounded by sea the communication of Yühuan with other districts depends chiefly on sea routes. The following rivers lying entirely in the districts connecting-towns and villages on the island.

T'ienk'aiho (天開河), running from T'ienloshan (田螺山), through Tak'eng (大坑), Hsits'ing (西青), Yaoyao (瑤岙), T'aohualing (桃花嶺), Toument'ou (陡門頭), Miying (密鶯), and Houchiao (後垵), and to Hsiatoumen (下陡門), is only 5 kilometres in length and navigable by rowboats. The freight carried on this river consists of rice, beans, and wheat.

Ch'enyaoho (陳 岙 河)—This river connects Kuch'engtou with Ch'angshantsui (長 山 嘴), via Tach'enyao (大陳 岙), Hsiaoch'enyao (小 陳 岙), Shuangfeng (雙 峯), Kuilungt'ou (龜 龍 頭), and Hsiaokushun (小 古 順), covering a distance of 6 kilometres.

Nantaho (南 大 河).—This stream flows from Hsiaop'uchushan (小 普 竹 山) through Hsiaot'ang (小 塘), to Hsits'ingmat'ou (西 青 馬 頭). It is only 3 kilometres long.

Nanpehho (南 北 河).—A water route from Hsich'engshan (西 城 山) to Lungwangt'ang (龍 王 塘) through T'ienmashan (天 馬 山), Tungyao (東 岙), Hsiyao (西 岙), P'ut'ien (蒲 田), Nant'ang (南 岙), Peht'ang (北 塘) and Lungwangt'ang (龍 王塘), covering a length of 9 kilometres.

Nengjenho (能 仁 河).—This stream, 3 kilometres in length, links Changyao (樟 岙) with Mutsoshan (木 杓 山) via Hsütu (徐 都), Chuangt'ou (樁 頭), Lit'ou (犁 頭) Ts'anyangken (殘 樣 根), Chiangchunyen (將 軍 岩), and Haoshan (鶴 山).

Nant'angho (南 塘 河).—This river, connecting Ch'angtiaotsui (長 釣 嘴) with Hsiaoyungkang (小 筠 崗), via Ch'umen (楚 門) and Toumen (陡 門), is 3 kilometres long.

LISHUI

The only important river in Lishui is the Tach'i (大 溪), which connects Lishui with Yungchia through the districts of Chingyuan, Lungch'uan Yunho and Ts'ingt'ien, and is of commercial importance for those districts. Lying in the southeastern part of the district, this river traverses important points in Lishui like Takangt'ou (大 港 頭), Pihu (碧湖), Chiulungmingho (九龍 茗 河)), Hsiaho (廈河), Yangliuwan (楊 柳 灣), covering a length of 47 kilometres. Through the two important streams, Sungyangkang (松 陽 港) and Chinyunch'i (縉 雲 溪), which join with the river, Sungyang hsien and Chinyun hsien are accessible. The river is navigable only in spring and summer, during which seasons the traffic is very heavy and the important products carried are bamboo and timber.

TS'INGT'IEN

Oukiang (甌江).—Coming from Yungchia and dividing into two branches at Ts'ingt'ien, the Tach'i (大溪) and Hsiaoch'i (小溪), the section of Oukiang in Tsingtien is 19 kilometres in length and flows through such important villages as Kaokangts'un (高岡村) and Ch'ients'angts'un (錢倉村). It is the principal waterway between Ts'ingtien and Yungchia.

Tach'i (大溪).—Being a branch of Oukiang, Tach'i traverses Lishui and Yunho and flows through Ch'ensanpu (陳三埠), Shihfan (石帆), Chengpu (禎埠), Chihch'it'ou (芝溪頭), Chuanliao (船寮) and the city of Ts'ingt'ien, a length of 56 kilometres within the district.

Hsiaoch'i (小溪).—Also a branch of Oukiang, this river is a link between Ts'ingt'ien and Chingning, with important towns and villages such as Wangyen (王岩) and Lingken (嶺根) on its banks. The section of the river in the district is 49 kilometres in length and is navigable by sail-boats.

CHINYUN

The only important river in Chinyun is Haoch'i (好溪), a branch of the Oukiang, starting from Tungtuchieh (東渡街), passing Lishui, Ts'ingt'ien and Yungchia, and emptying into Tach'i (大溪). The section of the river in the district measures 113 kilometres long, and bamboo rafts are the only means of communication.

SUNGYANG

Sungch'i (松溪), also known as Sungyangkang (松陽港), is a branch of Oukiang and the only important river in Sungyang hsien. With its source in Shuich'ang and entering the district at Chiehshou (界首) the river forms the link between Sungyang and Shuichang hsien. Emptying into Tach'i at Takangt'ou in Lishui (大港頭) Sungchi is also an artery between Sungyang and Lishui, Ts'ingt'ien Yungchia, and Yunho. The section of the river lying in the district is 58 kilometres in length, and considerable quantities of local products are carried by sailboats to Yungchia through this river.

SHUICHANG

Sungchi (松 溪).—Lying in the southeastern section of the district the Sungch'i, with its source at Kuiiling (貴 巖 嶺), flows into Sungyang hsien at Chiehshou (界 首) and forms the chief waterway connecting Shuichang with Lishui, Yungchia and Yünho, covering a distance of 35 kilometres in the district. The river is navigable by bamboo rafts and small boats only owing to its shallowness. Timber, alum, and tung oil form the important exports and salt and groceries are the staple imports transporting on the river.

Wuch'ikang (烏 溪 港).—Entering from Lungch'uan and leading to Ch'ühsien, the Wuchikang is the waterway between the two hsien via Wangts'unk'ou (王 村 口) and Hushan (湖 山), covering a distance of 49 kilometres. As there are many shoals the river is navigable by bamboo rafts and small boats only, and goods exported on this river are chiefly timbers and tung oil and imports consist of cotton piece-goods and groceries. The freight is averaged at 3 cents per 10 catties for 57 kilometre.

Lingshankang (靈 山 港).—This river, connecting Shuichang with Lungyu, via Tamapu (大 馬 埠), and Peichiehchen (北 界 鎮) is known as the Sui-lung (遂 龍 線) line. The section in the district is 26 kilometres long navigable by bamboo rafts only which ship from Shuichang timbers, bamboo shoots, and alum, and bring in cotton piece-goods.

LUNGCH'UAN

The Tach'i enters Lungch'uan from Chingyüan and leads to Yünho, Lishui, Ts'ing'tien and Yungchia. In Lungchuan, it passes Taot'aichen (道 泰 鎮) Ch'at'ienchen (查 田 鎮), Hsiaomeichen (小 梅 鎮), covering a distance of 87 kilometres. Regular service of sailboats between Lungch'uan and Yungchia run twice a month, carrying largely salted meat, poultry and groceries.

CH'INGYUAN

Ch'achi (槎 溪).—This river starts from Kuangshihshan (光 石 山) and runs to the southern side of

Wukungling (蜈蚣嶺) via Kuanchüts'un (官局村), Panwants'un (半灣村), forming the boundary between Chinyun in Chekiang and Sungch'i in Fukien. The section in the district is 50 kilometres in length.

Nanyangchi (南洋溪).—This stream flows from Lingkaoshan (鈴高山) through T'ient'outs'un (田頭村) Nanyangts'un (南洋村), and Kaoch'its'un (高溪村) to Chingning hsien. The length of the section in the district is 27 kilometres.

Yütouch'i (魚頭溪).—With its source at Chikuanshan (雞冠山) and flowing to the eastern part of Yütouchits'un (魚頭澄村), via Henglingts'un (橫嶺村), and Shuangchits'un (雙溪村), the Yüt'ouch'i forms the border line between Ch'ingyüan and Shouning hsien in Fukien. The section in the district is 17 kilometres long.

Ch'inch'i (秦溪).—This steam, also known as Tachi (大溪) locally, lies in the northern part of the district and flows from Mant'oushan (蠻頭山) to the northern side of Yüshan (魚山), thence entering Lungch'uan. The part of the river in Ch'ingyuan is 8 kilometres in length.

Chuk'ouch'i (竹口溪).—Rising from Leifengshan (雷風山), the Chuk'ouch'i flows into Sungch'i hsien (松溪) in Fukien at Tuch'engshan (土城山), after passing Potuts'un, (柏渡村), Tatsêts'un (大澤村), Chuk'outs'un (竹口鎮), Ip'ut'ing (驛舖亭), and Hsinyaoshih (新窯市), covering a distance of 2 kilometres within the hsien borders.

YUNHO

Tachi (大溪), a principal waterway leading to Lishui, Ts'ingt'ien and Yungchia, enters the district from Lungch'uan and flows through Chihshihchen (赤石鎮) Shiht'ang (石塘), and Chuts'unchen (局村鎮) covers a distance of 52 kilometres. The river is only navigable by small boats carrying passenger and cargoes. Cargoes transported on this river consist mainly of kerosene, cotton piece-goods, salt, rice and iron.

Fouyünch'i (浮雲溪), a branch of Tachi, starts from Huangchan (黃棧), passes through the city of Yünho and

Chuts'un (局村) and forms the link between the city and the neighbouring districts. Although it is only 28 kilometres in length, it is very rocky and navigable by only bamboo rafts. Cargoes transported on this river consist chiefly of charcoal, salt, and imported goods.

HSÜANP'ING

Wuchi (午溪), the only important river in Hsüanp'ing, starts from the southeastern part of the city and ends at Wuchienshan (烏尖山), thence into Lishui where it is known as Ch'üanchi (畎溪). It is an important waterway leading from Hsuanp'ing to Lishui and Yungchia. The section in the district is 4 kilometres long and with very rapid current, is navigable by both sailboats and bamboo rafts. Articles transported on this river consists of salt, alum, tung oil, sugar and grain.

CHINGNING

Shanchi (山溪), with its source in Chingning and known as Nanyangchi (南洋溪) and flowing from Lingkents'un (嶺根村) into Ts'ingt'ien where it is known as Hsiaochi (小溪), is the only important river in the Chingning. The section in Chingning is 102 kilometres in length and forms the main artery between this district and T'singt'ien

CHAPTER IV

POSTAL SERVICES

WHEN post-offices were first established in China in 1896, the whole country was divided into four main postal districts, North, Central, East, and South. In Chekiang Province the ports of Ningpo and Hangchow were included in the East area, while Wenchow was in the South area. Subsequently postal districts were made to correspond with administrative areas, and Chekiang was made an independent district, with Ningpo and Wenchow as sub-postal districts. This system continued in operation until 1913, when postal districts were re-arranged on the basis of provincial districts. In Chekiang an administrative office was established to superintend the operation of district offices.

The number of post-offices in the Province has been increasing every year, there being in 1932 altogether 545 offices, which represented 4.30 per cent of the total number of post-offices in China. This rapid progress in Chekiang's postal service was mainly the result of industrial, railway and highway development, which has been remarkable. In 1931 Chekiang had 17,580 kilometres of postal routes, increasing to 18,534 kilometres in 1932, which represented 3.75 per cent of China's postal routes. With regard to the volume of mail matters handled, an annual increase was seen with the exception of 1928. In 1932 the mail matter delivered numbered 46,953,300 pieces, representing 5.61 per cent of the total for the whole country. The number of parcels handled by Chekiang post-offices has been also increasing since 1828 in consequence of the steady stabilization of political conditions. As to postal remittances, the same progressive tendency has been shown; in 1931 this business amounted to $6,715,952, and during the first half of 1932 totalled $3,743,616.

Chekiang post-offices have always been very active undertakings, due mainly to the fact that the Province had a comparatively stable government, is densely populated, and enjoys adequate facilities for transportation. There are some striking figures available showing that postal activities in Chekiang have been profitable; in 1927 the profit on postal business amounted to $302,000, whereas the nation's total profit was only $95,089, and during the first two quarters of 1932 Chekiang made a profit of $332,825 on postal business while the nation as a whole incurred a deficit. The following figures are self-explanatory:—

POSTAL RETURNS FOR CHEKIANG.

Year	No. of Post Offices	Postal Route (km.)	Letters and Postcards	Parcels	Remittances	Postal Workers	Operating Income and Expenditure			Capital Expenditure
							Income	Expenditure	Profit	
1919	419	13,934	17,776,480	196,900	$1,411,500	728	$ 463,097	$238,912	$224,185	$ 6,406
1920	426	14,604	21,385,956	193,300	1,994,800	799	532,556	281,055	251,502	25,160
1921	435	15,163	25,077,240	196,600	2,096,400	803	580,625	297,393	283,231	2,345
1922	442	15,597	26,111,800	164,400	2,514,500	805	616,811	323,729	293,082	20,200
1923	446	15,804	29,101,400	199,200	2,928,900	826	682,408	356,627	325,781	650
1924	451	15,881	32,347,600	211,800	3,166,700	851	752,131	286,458	365,674	2,016
1925	461	16,171	33,044,200	246,000	3,769,100	889	833,098	427,627	405,471	33,700
1926	480	16,309	34,417,600	225,800	3,934,900	974	941,764	522,920	418,845	212,474
1927	476	16,376	36,217,700	162,700	3,793,800	947	936,044	634,043	302,000	54,825
1928	479	16,519	35,877,800	205,700	4,540,500	934	1,089,761	617,111	472,651	1,866
1929	486	16,651	39,096,800	221,600	5,173,899	953	1,249,591	733,530	516,061	1,901
July, 1930-June, 1931	531	17,580	44,469,300	250,000	6,715,952	974	—	—	—	—
January-June, 1932	545	18,534	46,953,300	319,700	3,743,616	983	769,979	437,153	332,826	19,852

CHEKIANG POSTAL STATISTICS ON PERCENTAGE BASIS IN REFERENCE TO NATIONAL TOTALS

Year	No. of Post Offices	Postal Route (km.)	Letters and Postcards	Parcels	Remittances	Postal Workers	Operating Income and Expenditure			Capital Expenditure
							Income	Expenditure	Profit	
1919	4.29	4.05	5.22	5.54	3.22	4.26	4.12	2.72	9.18	0.51
1920	4.06	3.68	5.33	4.58	3.39	3.89	4.20	2.69	11.36	1.99
1921	3.94	3.57	5.67	4.30	3.06	3.60	3.72	2.33	10.02	0.14
1922	3.91	3.55	6.12	3.43	3.28	3.38	3.60	2.52	7.62	1.07
1923	3.85	3.55	6.14	3.76	3.05	3.26	3.28	2.19	7.29	0.04
1924	3.83	3.48	6.19	3.69	3.34	3.22	3.23	2.04	8.41	1.26
1925	3.84	3.49	5.85	3.76	3.63	3.23	3.29	2.00	10.26	4.75
1926	3.93	3.46	5.87	3.75	3.67	3.36	3.33	2.06	13.91	17.88
1927	3.93	3.54	6.24	2.93	4.37	3.31	3.36	2.29	317.59	9.07
1928	3.95	3.60	5.63	3.33	4.48	3.36	3.50	2.07	38.11	0.45
1929	3.96	3.59	5.39	3.23	3.93	3.38	3.26	1.99	30.96	1.67
July, 1930-June, 1931	4.23	4.63	5.59	4.03	4.31	3.47	—	—	—	—
January-June, 1932 ..	4.30	3.75	5.61	4.90	3.99	3.48	4.76	2.19	866.18	3.94

DISTRIBUTION OF ACTIVITIES

In 1932 there were in Chekiang one post administration office, two first-class post-offices, 54 second-class, 60 third-class, 11 sub-offices, and 408 agencies, making a total of 545. There were in addition 1,006 collection-boxes.

DISTRIBUTION OF POST-OFFICES AND COLLECTION-BOXES

	POST OFFICES						Collection Boxes		Rural Stations	Stamp-selling Agencies
	First-Class	Second-Class	Third-Class	Sub-Offices	Agencies	Total*	City	Rural		
1919	3	60	3	6	336	419	327	228	262	—
1920	3	62	14	17	329	426	365	274	262	—
1921	3	62	22	18	329	435	372	312	262	—
1922	3	62	23	18	335	442	357	346	262	—
1923	3	62	23	18	339	446	359	365	262	—
1924	3	63	23	18	343	451	368	374	262	83
1925	3	57	40	18	342	461	367	395	262	84
1926	3	57	55	18	346	480	375	392	245	—
1927	3	57	55	10	350	476	383	397	245	—
1928	2	58	55	10	353	479	377	407	133	—
1929	2	57	61	10	355	486	366	431	136	—
July, 1930-June, 1931	2	54	67	11	396	531	339	509	134	—
January-June, 1932	2	54	69	11	408	545	235	547	134	—

*Including Adminrstration Office.

CHEKIANG POST-OFFICES CLASSIFIED ACCORDING TO BUSINESS HANDLED

	Express Mail	Insured Mail	C. O. D.	Money Orders: Issuing	Money Orders: Cashing	Money Orders: International	Parcels: Domestic	Parcels: International	Parcels: Motor & Air Mail
1919	38	8	—	69	11	—	36	66	183
1920	39	8	—	89	81	—	39	72	184
1921	40	8	—	98	89	2	40	73	185
1922	40	8	—	104	95	2	40	74	186
1923	40	9	3	107	98	5	40	73	186
1924	40	9	3	108	99	5	40	73	188
1925	40	9	3	119	110	5	46	48	191
1926	40	9	3	134	125	5	52	74	200
1927	42	8	3	126	124	5	51	72	196
1928	32	8	3	126	124	5	51	72	198
1929	32	8	3	131	129	5	52	75	201
July, 1930-June, 1931	36	9	3	135	135	5	52	74	110
January-June, 1932	39	9	3	—	—	—	54	74	115

POSTAL ROUTES

The total length of Chekiang postal routes in 1932 amounted to 18,534 kilometres, representing 3.75 per cent of the total in the country. The routes are of five types—principal rural courier routes, secondary courier routes, water-routes, railway and motor routes, as follows:—

	Principal Courier Routes (km.)	Secondary Courier Routes (km.)	Water-Routes (k.m.)	Railway Routes (km.)	Motor-Routes (km.)	Total (km.)
1919	4,748	1,665	7,291	230	——	13,934
1920	4,879	1,929	7,656	230	——	14,694
1921	4,891	2,239	7,803	230	——	15,163
1922	4,922	2,363	8,082	230	——	15,597
1923	4,925	2,431	8,218	230	——	15,804
1924	5,000	2,397	8,254	230	——	15,881
1925	5,231	2,326	8,384	230	——	16,171
1926	5,356	2,276	8,447	230	——	16,309
1927	4,990	2,341	8,815	230	——	16,376
1928	4,849	2,085	9,355	230	——	16,519
1929	4,849	2,085	9,355	230	——	16,519
July, 1930-June, 1931	4,484	2,634	9,755	230	468	17,580
Jan.-June, 1932	4,969	2,786	10,039	230	483	18,534

CLASSES OF MAIL MATTER.

There were in 1932 no less than 46,953,300 pieces of mail delivered in Chekiang, representing 5.61 per cent of the nation's total. This business appears to show an annual increases of about 4,000,000 pieces.

Mails are classified in two groups, by nature of service and quality of matter. According to service, mails are divided into ordinary and special, the latter consisting of express, registered, and insured mails, while according to quality, mails are divided into letters, cards, newspapers, books, circulars, commercial papers, and samples.

MAIL DELIVERIES CLASSIFIED ACCORDING TO SERVICE.

	Ordinary	Registered	Express	Insured	Total
1919	16,343,800	1,059,100	373,100	480	17,776,480
1920	19,915,200	1,224,100	246,300	356	21,285,956
1921	23,500,300	1,304,800	771,800	340	25,077,240
1922	24,903,900	968,000	239,600	300	26,111,800
1923	27,781,400	1,030,400	289,300	300	29,101,400
1924	30,889,200	1,141,700	316,300	400	32,347,600
1925	31,515,000	1,201,500	327,200	500	33,044,200
1926	32,932,600	1,171,400	313,200	400	34,417,600
1927	34,815,700	1,083,300	317,900	800	36,217,700
1928	34,154,900	1,340,300	381,700	900	35,877,800
1929	37,185,000	1,491,700	419,500	600	39,096,800
July, 1930-June, 1931	42,203,700	1,763,800	501,200	600	44,469,300
July-June, 1932	44,395,400	1,967,500	589,900	500	46,953,300

MAIL DELIVERIES CLASSIFIED ACCORDING TO QUALITY

	Letters	Post Cards	Ordinary or Special Mark Newspapers	Bulk Newspapers	Printed Matter and Books	Trade Circulars	Commercial Papers	Samples	Total
1919	10,464,780	4,873,500	—	2,331,400	—	—	73,400	33,400	17,776,480
1920	12,218,456	5,820,300	—	3,180,100	—	—	95,900	71,200	21,385,956
1921	13,496,440	6,153,000	—	5,216,100	—	—	107,200	104,500	25,077,240
1922	13,571,300	5,807,900	1,433,500	902,900	1,760,300	2,469,200	107,400	59,300	26,111,800
1923	14,888,000	6,437,100	1,749,200	926,900	1,973,700	2,928,200	117,200	81,100	29,101,400
1924	16,416,800	7,035,800	2,270,100	871,200	2,357,300	3,165,500	123,300	107,600	32,347,600
1925	18,074,400	7,563,900	3,677,100	—	2,894,500	585,100	132,300	116,900	33,044,200
1926	18,561,800	7,958,300	3,972,600	—	2,844,500	812,900	147,400	120,100	34,417,600
1927	19,579,300	8,383,000	3,842,200	—	2,866,700	1,278,400	145,600	122,500	36,217,700
1928	19,151,200	7,970,700	4,068,100	—	3,214,200	1,200,000	149,900	123,700	35,877,800
1929	20,841,800	8,417,800	4,629,200	—	4,192,800	726,400	148 000	140,800	39,096,800
July, 1930-June 1931	24,235,800	9,040,100	4,948,400	—	5,289,600	—	185,900	150,600	44,469,300
July-June, 1932	25,962,500	8,840,400	5,108,000	—	5,956,500	723,300	223,000	138,600	46,953,300

PARCELS

Returns from parcel delivery constitute an important item of postal revenue. The number of parcels handled by Chekiang post-offices during the first six months of 1932 was 319,700, with a total weight of 1,860,800 kilograms, and valued at $7,523,400—these figures representing respectively 4.90, 4.04 and 5.50 per cent of the totals for the whole country.

CLASSES OF MAIL MATTER.

There were in 1932 no less than 46,953,300 pieces of mail delivered in Chekiang, representing 5.61 per cent of the nation's total. This business appears to show an annual increases of about 4,000,000 pieces.

Mails are classified in two groups, by nature of service and quality of matter. According to service, mails are divided into ordinary and special, the latter consisting of express, registered, and insured mails, while according to quality, mails are divided into letters, cards, newspapers, books, circulars, commercial papers, and samples.

MAIL DELIVERIES CLASSIFIED ACCORDING TO SERVICE.

	Ordinary	Registered	Express	Insured	Total
1919	16,343,800	1,059,100	373,100	480	17,776,480
1920	19,915,200	1,224,100	246,300	356	21,285,956
1921	23,500,300	1,304,800	771,800	340	25,077,240
1922	24,903,900	968,000	239,600	300	26,111,800
1923	27,781,400	1,030,400	289,300	300	29,101,400
1924	30,889,200	1,141,700	316,300	400	32,347,600
1925	31,515,000	1,201,500	327,200	500	33,044,200
1926	32,932,600	1,171,400	313,200	400	34,417,600
1927	34,815,700	1,083,300	317,900	800	36,217,700
1928	34,154,900	1,340,300	381,700	900	35,877,800
1929	37,185,000	1,491,700	419,500	600	39,096,800
July, 1930-June, 1931	42,203,700	1,763,800	501,200	600	44,469,300
July-June, 1932	44,395,400	1,967,500	589,900	500	46,953,300

MAIL DELIVERIES CLASSIFIED ACCORDING TO QUALITY

	Letters	Post Cards	Ordinary or Special Mark Newspapers	Bulk Newspapers	Printed Matter and Books	Trade Circulars	Commercial Papers	Samples	Total
1919	10,464,780	4,873,500	—	2,331,400	—	—	73,400	33,400	17,776,480
1920	12,218,456	5,820,300	—	3,180,100	—	—	95,900	71,200	21,385,956
1921	13,496,440	6,153,000	—	5,216,100	—	—	107,200	104,500	25,077,240
1922	13,571,300	5,807,900	1,433,500	902,900	1,760,300	2,469,200	107,400	59,300	26,111,800
1923	14,888,000	6,437,100	1,749,200	926,900	1,973,700	2,928,200	117,200	81,100	29,101,400
1924	16,416,800	7,035,800	2,270,100	871,200	2,357,300	3,165,500	123,300	107,600	32,347,600
1925	18,074,400	7,563,900	3,677,100	—	2,894,500	585,100	132,300	116,900	33,044,200
1926	18,561,800	7,958,300	3,972,600	—	2,844,500	812,900	147,400	120,100	34,417,600
1927	19,579,300	8,383,000	3,842,200	—	2,866,700	1,278,400	145,600	122,500	36,217,700
1928	19,151,200	7,970,700	4,068,100	—	3,214,200	1,200,000	149,900	123,700	35,877,800
1929	20,841,800	8,417,800	4,629,200	—	4,192,800	726,400	148 000	140,800	39,096,800
July, 1930-June 1931	24,235,800	9,040,100	4,948,400	—	5,289,600	—	185,900	130,600	44,469,300
July-June, 1932	25,962,500	8,840,400	5,108,000	—	5,956,500	723,300	223,000	138,600	46,953,300

PARCELS

Returns from parcel delivery constitute an important item of postal revenue. The number of parcels handled by Chekiang post-offices during the first six months of 1932 was 319,700, with a total weight of 1,860,800 kilograms, and valued at $7,523,400—these figures representing respectively 4.90, 4.04 and 5.50 per cent of the totals for the whole country.

Parcels are divided into ordinary and special, the latter including insured and C.O.D. parcels, and the following figures show the activity of this business:—

PARCELS DISTRIBUTED

	ORDINARY			INSURED			C. O. D.			TOTAL		
	Pieces	Value (dollars)	Quantity (kilograms)	Pieces	Value (dollars)	Quantity (kilograms)	Pieces	Value (dollars)	Quantity (kilograms)	Pieces	Value (dollars)	Quantity (kilograms)
1919	158,300	6,395,900	568,800	11,200	594,300	4,900	27,400	281,200	28,400	196,900	7,271,400	692,100
1920	154,400	6,014,900	589,700	11,000	669,000	85,500	27,900	449,500	35,600	193,300	7,133,400	710,800
1921	163,800	6,065,000	637,300	7,100	458,700	53,400	25,700	528,100	38,300	196,600	7,061,800	729,000
1922	142,500	5,257,800	523,200	3,200	253,200	22,900	18,700	380,500	29,900	164,400	5,891,500	570,000
1923	174,800	6,837,000	656,600	4,600	380,200	35,800	19,800	366,300	34,800	199,200	7,583,500	727,200
1924	187,100	7,615,200	678,800	5,200	366,000	41,900	19,500	369,200	35,600	211,800	8,410,400	756,300
1925	223,900	7,941,100	886,200	2,900	247,100	20,200	19,200	335,000	47,800	246,000	8,523,200	954,200
1926	206,400	6,598,700	829,700	3,000	287,000	24,000	16,400	235,100	60,700	225,800	7,120,800	914,400
1927	153,200	4,224,000	704,000	1,900	120,000	16,000	7,600	150,000	25,000	162,700	4,494,000	745,000
1928	192,400	4,901,000	973,800	1,000	62,300	7,100	12,300	191,800	40,900	205,700	5,155,100	1,021,800
1929	204,400	7,065,100	1,091,600	1,000	77,000	7,300	16,200	194,800	82,700	221,600	7,336,900	1,181,600
July, 1930-June, 1931	214,200	6,252,600	1,131,200	900	67,800	6,600	34,900	785,200	168,200	250,000	7,105,600	1,306,000
January-June, 1932	274,600	6,756,000	1,642,100	1,300	76,800	8,500	43,800	690,600	210,200	319,700	7,523,400	1,860,800

DOMESTIC REMITTANCES

Domestic remittance business in Chekiang has grown annually except in 1927. The total value represented by money-orders issued in 1931 amounted to $6,715,952, as against $11,012,795 cashed. During the first two quarters of 1932 money-orders issued and cashed aggregated $3,743,616 and $5,850,652 respectively, constituting 3.99 and 6.15 per cent of the total domestic postal remittance business in China, details being as follows:

DOMESTIC REMITTANCES.

	Money Orders Issued		Money Orders Cashed	
	Value	No.	Value	No.
1919	$1,411,500.00	99,800	$2,086,400.00	127,700
1920	1,994,800.00	131,700	2,800,800.00	166,100
1921	2,096,400.00	144,000	2,936,700.00	177,300
1922	2,514,500.00	162,000	3,388,500.00	193,500
1923	2,928,900.00	187,900	4,232,900.00	237,700
1924	3,166,700.00	200,100	4,360,200.00	239,600
1925	3,769,100.00	227,300	4,911,400.00	260,700
1926	3,934,900.00	230,100	5,901,300.00	296,300
1927	3,793,800.00	194,200	4,884,800.00	237,000
1928	4,540,500.00	240,300	6,763,100.00	311,800
1929	5,173,899.00	278,808	8,625,483.00	384,009
July, 1930-June. 1931	6,715,952.00	336,147	11,012,795.00	480,792
January-June, 1932	3,743,616.51	175,742	5,850,652.92	236,623

POSTAL WORKERS

The following are details of members of the postal staff and other workers in the Chekiang district:

INDOOR STAFF.

	Commissioners	Deputy Commissioners	Postal Officials	Assistant Officials	Clerks	Assistant Clerks	Sorters	Others	Total
1919	—	1	5	—	36	103	73	—	218
1920	—	1	5	—	42	105	101	—	254
1921	—	2	3	—	43	101	105	—	254
1922	—	2	4	—	39	108	98	—	251
1923	—	2	4	—	40	110	101	—	257
1924	—	1	4	—	40	115	105	—	265
1925	—	2	3	—	41	115	124	—	285
1926	1	2	6	—	42	121	149	—	321
1927	—	3	6	—	37	121	143	1	311
1928	1	—	—	145	160	—	—	1	307
1929	1	—	—	160	157	—	—	1	319
July, 1930-June, 1931	1	1	—	179	155	—	—	—	336
January-June, 1932	1	1	—	180	156	—	—	—	338

OTHER WORKERS

	Postmen	Couriers	Others	Total
1919	281	169	60	510
1920	304	171	70	545
1921	303	171	75	549
1922	304	175	75	554
1923	306	185	78	569
1924	311	192	83	586
1925	324	195	85	604
1926	351	202	100	653
1927	349	177	110	636
1928	344	171	112	627
1929	349	177	108	634
July, 1930-June, 1931 ..	357	145	136	638
January-June, 1932	361	145	139	645

REVENUE AND EXPENDITURE

The Chekiang district during the first half of 1932 showed a total postal revenue of $769,978, as against an expenditure of $437,153, leaving a credit balance of $332,-825, in addition to which there was a capital investment of $19,852. Details are supplied in the tables below (cents omitted) :—

REVENUE.

	Stamp Sales	Regietration Fees	Sales of Publications	Miscel-laneous	Total
1919	$458,083	$2,600	$148	$2,267	$463,098
1920	525,855	3,433	136	3,133	532,557
1921	572,944	3,814	79	3,788	580,625
1922	608,322	4,362	72	4,055	616,811
1923	674,100	4,767	133	3,408	682,408
1924	741,887	5,791	81	4,373	752,132
1925	822,360	5,938	111	4,689	833,098
1926	930,483	6,661	118	4,503	941,765
1927	925,398	5,444	256	4,946	936,044
1928	1,074,903	8,810	135	5,514	1,089,762
1929	1,226,265	8,443	98	4,478	1,249,590
January-June, 1932	766,237	3,510	85	145	769,978

EXPENDITURE.

	Salaries and Wages	Allowances	Office Expenses	Freight	Compensation	Total
1919	$187,945	$ 6,113	$35,778	$ 8,929	$145	$238,912
1920	218,474	10,819	41,528	10,073	159	281,054
1921	234,647	9,628	42,494	10,374	248	297,393
1922	244,401	23,831	44,254	11,034	266	323,728
1923	227,858	19,471	46,487	11,958	851	356,626
1924	298,131	24,187	50,071	13,063	1,003	386.457
1925	336,662	28,345	49,808	12,555	254	427,626
1926	419,661	31,901	55,459	15,607	289	522,919
1927	456,270	97,406	54,675	23,898	1,792	634,043
1928	453,495	81,727	55,799	5,845	242	617,110
1929	533,808	101,343	60,651	35,570	2,155	733,529
January-June, 1932	324,991	62,007	33,596	16,511	45	437,153

CAPITAL INVESTMENT

	Buildings	Equipment	Cars	Miscellaneous	Total
1919	$1,903	$4,468	$ 33	—	$6,406
1920	23,395	1,669	95	—	25,159
1921	—	2,212	—	$ 132	2.344
1922	19,414	701	—	84	20,199
1923	—	650	—	—	650
1924	—	1,872	30	112	2,015
1925	30,707	1,103	1,097	791	33,699
1926	205,843	1,498	397	1,122	22,474
1927	41,336	11,199	166	11,122	54,825
1928	2,802	261	668	5	1,866
1929	—	1,700	202	402	1,901
January-June, 1932	19,002	175	105	779	19,852

SAVINGS BANKS

Since the inauguration of postal remittances and savings banks in Chekiang in 1919, their number increased rapidly, with a remarkable expansion of business, with the exception of the period between 1927 and 1929, when many postal-banks were closed. At the end of 1919 there were in the Chekiang district nine postal banks, increasing to 16 the following year, the figures for subsequent periods being 31 in 1921 and 1922, 33 in 1923, 29 form 1924 to 1926, 20 in 1927, 18 in 1928 and 1929, 61 in 1931, and 60 in 1932. The districts where savings bank service is available are as follows: Hanghsien, Kenshanmen (艮山門), Zakow (閘口), Hsienchiao (筧橋), T'angch'i (塘栖), Nanhsingchiao (南星橋), Kungchenchiao (拱宸橋),

Ninghsien, Jihhsinch'iao (日新橋), P'englouch'ien (彭樓前), Shaohsing, Tahsuehch'iao (大雪橋), Haining, Hsiashih (硤石), Changan (長安), Fuyang, Yühang, Chiahsing, Chiashan, Haiyen, Ts'ungteh P'inghu, Wuchen (烏鎮), Tunghsiang, Wuhsing, Nanhsun (南潯), Linghu (菱湖), Shuanglin (雙林), Ch'anghsing (長興), Tehts'ing (德清), Tsuch'i, Chenhai, Tinghai, Kêch'iao (柯橋), Hsiaoshan, Linpu (臨浦), Chuchi, Yüyao, Shangyü, Pehkuan (百官), Ch'enghsien Linhai, Haimen (海門), Huangyen, Chinhua, Lanch'i, Tungyang, Yungk'ang Chühsien, Lungyu, Chienteh, Tunglu, Yungchia, T'iehchinglan (鐵井欄) and Lishui.

The increase in the number of deposit accounts has been very rapid, starting with the very small number of 103 in 1919. By the end of the first half of 1932, there were on the books of the postal savings banks altogether 4,545 accounts, 45 times the original number. The following figures are of interest:—

POSTAL BANK DEPOSITORS CLASSIFIED ACCORDING TO OCCUPATIONS

	Government Employees	Teachers and Students	Merchants	Farmers and Artisans	Servicemen	Public Institutions	Postal Employees	Others	Total
1919	—	30	26	3	12	—	9	23	103
1920	—	91	58	1	32	1	27	134	344
1921	31	132	103	2	29	7	59	307	670
1922	71	151	125	9	121	6	53	419	955
1923	111	232	165	18	37	9	56	423	1,051
1924	148	244	179	18	42	13	59	491	1,194
1925	208	339	254	30	73	25	72	435	1,436
1926	225	431	215	44	55	30	78	600	1,678
1927	211	252	164	31	32	14	93	506	1,303
1928	188	258	137	25	46	14	116	697	1,481
1929	203	371	215	28	75	20	165	761	1,838
July, 1930-June, 1931	526	801	545	49	291	28	262	1,585	4,177
January-June, 1932	537	928	602	55	354	39	272	1,698	4,545

With regard to deposits, a corresponding increase was seen, the expansion being particularly conspicuous in 1931 and 1932, as shown in the following table:—

DEPOSITS CLASSIFIED ACCORDING TO AMOUNT

	Below $10	$11-$50	$52-$100	$101-$500	$501-$1,000	$1,001-$2,000	$2,001 $3,000	Above $3,000	Total
1919	223	597	594	—	—	—	—	—	1,616
1920	458	2,090	2,636	9,068	4,344	—	—	—	18,598
1921	2,907	3,908	4,532	20,779	5,381	6,505	—	—	44,014
1922	1,923	5,702	6,532	32,123	9,652	4,513	—	—	60,448
1923	2,928	6,063	7,606	39,254	9,273	8,534	—	—	73,661
1924	1,942	6,762	7,883	54,129	13,257	9,678	—	—	93,653
1925	1,644	7,554	10,213	73,271	26,970	16,418	—	—	136,072
1926	2,621	9,260	14,758	83,340	29,877	25,297	—	—	165,156
1927	1,956	6,331	8,594	79,572	40,559	32,200	—	—	169,215
1928	2,296	7,251	10,190	80,496	42,661	46,529	—	—	189,426
1929	2,108	8,432	14,021	112,028	55,191	51,060	4,019	—	246,863
July, 1930-June, 1931	8,217	14,182	20,766	140,543	120,905	89,220	13,791	3,961	420,587
January-June, 1932	5,291	24,384	37,068	213,608	110,620	68,735	17,347	17,018	494,074

CHAPTER V

TELEGRAPH, RADIO, TELEPHONE SERVICES AND BROADCAST STATIONS

TELEGRAPH services in Chekiang Province are operated by the Ministry of Communications, which also manages radiograph services in Hangchow, Tinghai and Ningpo. Radio services in other cities, as well as city or long-distance telephones and broadcast stations are mainly provincial undertakings, except in some cities where local telephones are operated by private concerns.

TELEGRAPHS

According to an investigation conducted in 1931, there were in that year 47 telegraph offices in the Province (4.11 per cent of China's total), employing 503 assistants (3.36 per cent of China's total). The total length of wire was 2,384.04 kilometers (2.32 per cent of the nation's total) with 107 telegraph machines (4.13 per cent of the total). The volume of telegraph business amounted to 2,888,234 words from July, 1930 to June, 1931 while the number of telegrams transmitted was 103,332.

In the Province, there are one telegraph administration office, four third-class, four fourth-class and 38 branch offices, scattered in the following places: Hangchow, Kungchenchiao, Changan, Chiahsing, P'inghu, Chapu, Chiashan, T'unghsiang, Wuhsing, Nanhsun, Mokanshan, Sanchiaopu, Ningpo, Haimen, Tsuch'i, Yüyao, Fenghua, Chenhai, Lungshanchen, Ninghai, Shaohsing, Tsaoê, Hsiaoshan, Chuchi, Ch'enghsien, T'aichow, Huangyen, Yungk'ang, Wenling, Chinhua, Lanch'i, Wui, P'ukiang, Ch'ühsien, Lungyu, Kiangshan, Ch'angshan, Chienteh, Shunan, Yungchia, Lots'ing, Lishui and Chinyun.

Employees include directors, department heads, technical experts, clerks and messengers. In Chekiang there are 84 persons serving in the capacity of director and department heads, 6 of technical experts, 172 clerks (who are divided into three classes), and 278 servants and messengers.

In Chekiang the total length of telegraph lines amounts to 2,400 kilometers, the length of wire being estimated at over 5,000 kilometers, connected by more than 30,000 poles. As to cables, the total length is 7.04 kilometers. The following table shows the development of the telegraph communications in the province during the last three years:

	LINES			CABLES	
	Total Distance (km.)	Length of Wire (km.)	No. of Poles	Total Distance (km.)	Length of Cables (km.)
1928	2,378.00	4,924.00	28,834	7.04	18.01
1929	2,377.00	4,924.00	28,834	7.04	18.01
July, 1930-June, 1931	2,402.50	5,061.50	30,259	7.04	18.01

During the period from July, 1930 to June, 1931, the volume of business amounted to 2,888,234 words, and the number of telegrams transmitted was 103,332, representing an increase of 442,556 and 2,982 respectively as compared with 1929. The tables below show the improvement in Chekiang's telegraph business during the last three years:

NO. OF TELEGRAM DESPATCHES IN CHEKIANG

	GOVERNMENT		URGENT		
	Chinese	Foreign	Chinese	Coded	Foreign
1928	9,807	75	1,604	7	71
1929	9,486	14	1,293	11	156
July, 1930-June, 1931 ..	15,208	20	1,350	4	274

	ORDINARY			PRESS	
	Chinese	Coded	Foreign	Chinese	Foreign
1928	80,283	507	3,540	284	—
1929	82,716	1,527	4,644	353	1
July, 1930-June, 1931	78,982	800	5,928	534	—

	FAMINE AFFAIRS		TOTAL	
	Chinese	Foreign	Chinese	Coded & Foreign
1928	37	——	92,015	4,200
1929	149	——	93,997	6,353
July, 1930-June, 1931 ...	232	——	96,306	7,026

VOLUME OF TELEGRAPH BUSINESS IN CHEKIANG

(Number of words)

	GOVERNMENT		URGENT		
	Chinese	Foreign	Chinese	Coded	Foreign
1928	928,211	4,450	30,176	119	853
1929	791,224	297	25,221	206	1,858
July, 1930-June, 1931	1,209,642	622	25,528	76	2,000

	ORDINARY			PRESS	
	Chinese	Coded	Foreign	Chinese	Foreign
1928	1,492,608	13,359	37,930	15,147	—
1929	1,516,651	25,721	44,931	39,989	10
July, 1930-June, 1931	1,518,146	24,076	800	39,230	—

	FAMINE AFFAIRS		TOTAL	
	Chinese	Foreign	Chinese	Coded & Foreign
1928	2,029	——	2,468,171	56,711
1929	9,570	——	2,382,655	73,023
July, 1930-June, 1931 ..	16,278	——	2,808,824	79,410

RADIOGRAPH

Radiograph services in Chekiang are either operated by the Ministry of Communications or by the Provincial Government. The Ministry has now three wireless stations in the province, at Tinghai, Hangchow and Ningpo. The Tinghai station, XIO, was first put in operation in February, 1930, the wave-length in day-time being 53½ meters, while at night the wave used is 100 meters, carrying communications between Shanghai, Hangchow and Ningpo. The fact that Tinghai is an island entirely cut off from the main land of the province renders radio services very necessary. As to the Hangchow Station (XIP), the service was inaugurated in October, 1927. The station is equipped with one receiver and two transmitters, the power used being 100 watts. The wave length in daytime is 66 meters and at night, 77 meters. Direct communications are now being carried between Shanghai, Ningpo and

Tinghai. The third station (KIQ) operated by the Ministry of Communications is at Ningpo, opened about a year later than the Hangchow station. It has two receivers and two transmitters, the power used being 100 watts, while the wave-length is 36 and 60 meters during the daytime and 64 and 73 meters at night.

The first provincial wireless station in Chekiang was established in 1928, and to facilitate communications with border-cities, four short-wave stations were put into operation at P'ingyang, T'aishun, Ch'ingyuan and Lungch'uan in the summer of 1929. The main station uses a power of 100 watts, the receiver and transmitters being installed in separate places to increase efficiency of the work. Branch stations employ only 40-watt power.

CITY TELEPHONE SERVICE

The telephone service in Chekiang was first started in Hangchow in 1913, when a group of merchants invested in the first telephone company for the Province. Merchants in other cities followed suit, and before 1927 telephone service was available in all such principal cities as Ningpo, Wuhsing, Hsiashih, Pinghu, Chiahsing, Shaohsing, Chiashan, Nanhsun and Haiyen.

One of the recent development in Chekiang's communication system is the formation, under the auspices of the Provincial Reconstruction Department, of the so-called "provincial telephone network." Long-distance telephone lines, which link almost every part of the Province, have now been connected, with urban lines. A new convenience for telephone development was next offered to the Provincial Government by the Hangchow Telephone Company shareholders, who, of their own initiative, handed the management over to the Government. The nerve of Chekiang's telephone system is now the Chekiang Provincial Telephone Bureau, who has control over all the telephone companies in the Province, Government or private.

Among the private telephone companies in Chekiang are those in Ningpo, Shaohsing, Yüyao, Wuhsing, Chiahsing, Yungchia, P'inghu, Hsiashih, Tinghai, Nanhsun, Chiashan, Ts'ungteh and Haining details being as follows:

Name of Company.	Location	No. of Exchanges	Subscribers	Monthly Charge
Shaohsing Tel. Co. (紹興電話公司)	Shaohsing	550	500	Residence, $4.50; firms, $5.80
Yuyao Tel. Co. (餘姚電話公司)	Yüyao	100	96	$3
Tung-Ou Tel. Co. (東甌電話公司)	Yungchia	550	380	Residence, $4; others, 5
Ssu-Ming Tel. Co. (四明電話公司)	Ningpo	2,100	1,621	Residence, $4.50; others, $5.50
Shenchiamen Tel. Co. (沈家門電話公司)	Tinghai	45	43	$3
Wuhsing Tel. Co. (吳興電話公司)	Wuhsing	500	451	Residence, $3.70; firms and offices, $4.40; public places, $5
Chung-Hsing Tel. Co. (中興電話公司)	Chiahsing	450	405	Residence, $3.20; firms and offices, $3.60; public places, $4
Chiashan Tel. Co. (嘉善電話公司)	Chiashan	145	140	$3.50
Yung-Tung Tel. Co. (永通電話公司)	P'inghu	350	300	Residence, $2.30; firms, $3.20
Hsiashih Tel. Co. (硤石電話公司)	Haining	240	196	$3
Hsieh-Chuan Tel. Co. (斜川電話股份有限公司)	Haining	20	—	
Tung-Li Tel. Co. (通利鄉村電話公司)	Ts'ungteh	100	73	$2.40
Nanhsun Tel. Co. (南潯電話公司)	Nanhsun	—	150	——
Kuang-Ta Tel. Co. (廣達電話公司)	Ts'ungteh	—	60	——
Shuanglin Tel. Co. (雙林鎮電話公司)	Wuhsing	—	50	——
Haining Tel. Co. (海寧電話公司)	Haining	—	50	——
Ssu-Ting Tel. Co. (四定電話公司)	Yuanhua (袁 什)	—	50	——

There are at present five telephone companies under the Provincial Government, in Hangchow, Chinhua, Lanch'i, Haimen and Ch'enghsien, the concerns in the last named two places being newly opened. In addition, about 10 more companies will open at Lishui, Ch'anghsing, Lungch'uan, Huangyen, Chuchi, Ts'uch'i, Linp'u, Chienteh, Shihwan (石灣) and Wuchen (烏鎮).

The Hangchow Telephone Company gives usually the most satisfactory service. Since it became a government enterprise, many improvements have been made, such as the installation of automatic dials and the laying of underground wires. The company has now more than 2,300 subscribers, yielding a revenue of about $17,000 a month.

LONG-DISTANCE TELEPHONES

The first long-distance telephone lines in Chekiang Province were installed in 1922. The service was originally for strategic purposes and available only in those cities where telegraph lines could be found. The development had been very slow until the advent of the Nationalist Government in 1927, when a new department, the Reconstruction Department, was established under the Provincial Government. In March, 1928, a preparatory office was set up in Hangchow charged with the work of improving and developing the long-distance telephone services in the Province. At the very beginning of its establishment the new office was busy at surveying new lines, the regulation of construction standard and the choice of building materials. The original plan was to make Hangchow the center of a network of telephone lines, of which there would be seven main lines; namely, Hangchow-Fengching, Hangchow-Ch'anghsing, Hangchow-Ningpo, Hangchow-Yungchia, Hangchow-Ch'ühsien, Ch'ühsien-Yungchia, and Hangchow-Lishui. Room was made to extend the system to other provinces as well. Thus, the Hangchow-Fengching line was intended to form a part of the Hangchow-Shanghai line, the Hangchow-Ch'anghsing line, that of the Nanking-Hangchow line, the Hangchow-Ningpo and Ningpo-Yungchia lines, those of the Chekiang-Fukien-Kuangtung line and the Hangchow-Chühsien line, that of the Chekiang-Kiangsi line.

The plan having been thus carefully drawn up, the Chekiang Provincial Government appropriated $50,000 a month for its execution. In 1930 four engineering corps were sent out to complete the proposed lines. The progress of their work which had been carried favorably, unfortunately was checked in 1931, the year of national crisis, when the Provincial Government was forced to adopt strict retrenchment measures. Up to the present, nevertheless, the total length of long-distance telephone lines in the Province has been well over 6,400 *li*, and the service is operated by 47 branch offices and 106 agencies. Details are shown in the following table compiled from a report published in June, 1931:

Line	When Completed	Wire Used	Length of the Line (*li*)
Shaohsing-Ch'enghsien (紹興嵊縣綫)	July, 1931	No. 12 copper	155
Ch'enghsien-Hsinch'ang (嵊縣新昌綫)	July, 1931	No. 14 iron	33
Hsiaoshan-Hsihsing (蕭山西興綫)	July, 1931	No. 14 iron	11
Hsiaoshan-Wenchiayen-Ichiao (蕭山聞家堰西橋綫)	July, 1931	No. 14 iron	37
Linpu-Hsiaoshan (臨浦蕭山綫)	July, 1931	No. 14 iron	36
Luchiapu-Changt'ing (陸家埠丈亭綫)	Aug., 1931	No. 12 iron	12
Taoshihkung-Kuanhaiwei (道士宮觀海衛綫)	Sept., 1931	No. 12 iron	42
Wenling-Tsekuo (溫嶺澤國綫)	Oct., 1931	No. 14 iron	32
Yunho-Chingning (雲和景寧綫)	Oct., 1931	No. 12 iron	41
Huangyen-Luch'iao (黃巖路橋綫)	Oct., 1931	No. 14 iron	30
Lishui-Yunho-Lungch'uan (麗水雲和龍泉綫)	Nov., 1931	No. 12 copper	232
Wenling-Wenlingchieh (溫嶺溫嶺街綫)	Nov., 1931	No. 14 iron	18
Shuich'ang-Kushih (遂昌古市綫)	Nov., 1931	No. 14 iron	35
Luch'iao-Haimen (路橋海門綫)	Dec.. 1931	No. 14 iron	25
Tsêkuo-P'anlang (澤國潘郎綫)	Dec.. 1931	No. 14 iron	18
Shunan-Kangkou (淳安港口綫)	Jan., 1932	No. 14 iron	20

Line	When Completed	Wire Used	Length of the Line (*li*)
Shunan-Shuian (淳安遂安綫)	Jan., 1932	No. 12 iron	50
Hsinho-Yuheng (新河營橫綫)	Jan., 1932	No. 14 iron	24
Yuheng-Sungmen (營橫松門綫)	Jan., 1932	No. 14 iron	20
Luchiapu-Lichia (陸家埠李家綫)	Jan., 1932	No. 12 iron	7
Ninghsien-Chenhai (鄞縣鎮海綫)	Feb., 1932	No. 14 iron	38
Taoshihkung-Minghoch'ang (道士宮鳴鶴場綫)	Mar., 1932	No. 12 iron	8
Ninghsien-Fenghua (鄞縣奉化綫)	Apr., 1932	No. 12 iron	55
Chuchi-Iwu-Chinhua (諸暨義烏金華綫)	May, 1932	No. 12 copper	190
Chinhua-Wui-Yungk'ang (金華武義永康綫)	May, 1932	No. 12 iron	140
Yuanch'iao-Huangyen (院橋黃巖綫)	May, 1932	No 12 iron	21
Lots'ing-Hungch'iao (樂清虹橋綫)	May, 1932	No. 14 iron	31
Ninghsien-Ts'uch'i (鄞縣慈谿綫)	May, 1932	No. 12 iron	30
Iwu-Tungyang (義烏東陽綫)	June, 1932	No. 12 iron	35
Tsêkuo-Hsinho-Hsiat'angchueh (澤國新河下塘角綫)	June, 1932	No. 10 iron	31
Tsêkuo-Hsinhe (澤國新河綫)	June, 1932	No. 14 iron	17
Hsiashih-Haiyen (硤石海鹽綫)	July, 1932	No. 12 copper	42
Tsêkuo-Shihyuluch'iao (澤國石油路橋綫)	July, 1932	No. 12 iron	20
Hsihsing-Ch'angho (西興長河綫)	July, 1932	No. 14 iron	15
Hungch'iao-Taching (虹橋大則綫)	Sept., 1932	No. 12 iron	60
Chühsien-Lungyu (衢縣龍游綫)	Sept., 1932	No. 12 iron	50
Huapu-Yanglin (華埠楊林綫)	Sept., 1932	No. 12 iron	39
Chinhua-Lanch'i (金華蘭谿綫)	Oct., 1932	No. 12 iron	45
Chienteh-Shouch'ang (建德壽昌綫)	Sept., 1932	No. 12 iron	67

Line	When Completed	Wire Used	Length of the Line (*li*)
Chushan-Panpu (舟山半浦綫)	Sept., 1932	No. 12 iron	12
Taoshihkung-T'anglitsun (道士宮唐磊村綫)	Sept., 1932	No. 12 iron	1
Taoshihkung-Shenshihchiao (道士宮沈師橋綫)	Sept., 1932	No. 12 iron	3
Kuanhaiwei-Tungshantou (觀海衛東山頭綫)	Sept., 1932	No. 14 iron	4
Ts'uch'i-Fanshihchen (慈谿范市鎮綫)	Sept., 1932	No. 12 iron	29
Taoshihkung-Michiata (道士宮密家埭綫)	Nov., 1932	No. 14 iron	8
Shunan-Chayuan (淳安茶園綫)	Dec., 1932	No. 12 iron	36
Shunan-Weip'ing (淳安威坪綫)	Dec., 1932	No. 12 iron	46
Shihpat'iao-Paishakuan (十八跳白沙埠綫)	Dec., 1932	No. 12 iron	19
Yanglin-Haolinkuan (楊林澇林埠綫)	Dec., 1932	No. 12 iron	31

When the long-distance telephone business was first started in May, 1929, services were limited to a small area from Hangchow to Ch'anghsing and to Ihsing and Nanking in Kiangsu Province, bringing a revenue of about $200 a month. With the rapid extension of service lines during the past two or three years, business has greatly increased and the monthly revenue to the Provincial Government has augmented from $200 to more than $10,000.

BROAD-CAST STATIONS

The establishment of broad-cast stations in Chekiang Province was proposed in 1928 to facilitate communications between the capital and outlying cities. With the help of the radio, it was expected that urgent messages could be despatched and received by Provincial authorities to and from any city in an appropriate time. The work of installation was done in ten months, and in October, 1928, the first radio service was inaugurated, with the main station built in Hangchow, the other 75 cities being each equipped with a branch station.

CHAPTER VI

FREIGHT BROKERS AND EXPRESS COMPANIES

TRANSPORTATION of merchandise in Chekiang is usually handled by express companies and *kuo t'ang* hongs (過塘行), the latter, who specialist in water transportation on the Chientang River, being much larger in number. There are comparatively few express companies, as their activities are limited to rail transportation.

In Hangchow, which is served by the Shanghai-Hangchow-Ningpo railway and the Chientang River, most of the express companies and *kuo t'ang* hongs are established, there being no less than 100 such firms in the Municipality. *Kuo t'ang* hongs in Hangchow are divided into four groups: the Anhui group, consisting of firms owned and managed by merchants from that province, handling tea, lacquer and other products of Anhui, the Chinkiang group, handling goods imported from Peiping and Kuangtung, the *k'ai sao* (開稍) group, handling the transportation of miscellaneous goods, and the grain group, handling cereals and foodstuffs. The last three groups are mostly firms owned and operated by natives of Iwu and Shaohsing.

In other districts along the Chientang River and the Shanghai-Hangchow-Ningpo railway, sush as Ningpo, Shaohsing, and Hsiaoshan, the express companies and *kuo t ang* hong are usually on a much smaller scale than those in Hangchow. The following table shows the distribution of *kuo t'ang* hong and express companies in Chekiang districts:—

	Number	Capital	Annual Turnover
Hangchow	110	$ 223,660	$1,416,960
Ningpo	11	94,500	——
Hsiaoshan	71	12,000	——
Shaohsing	15	5,280	——
Yungk'ang	5	5,000	8,000
Linhai	7	4,450	2,390
Yüyao	2	5,000	6,100
Chienteh	1	——	100

	Number	Capital	Annual Turnover
Shouch'ang	1	$ 1,000	$ 1,000
Ch'enghsien	9	15,000	——
T'aishun	9	——	——
Lanch'i	17	6,500	——
T'ient'ai	5	300	2,800
Kiangshan	15	——	——
Ch'angshan	15	——	6,100
Lishui	4	——	——
Total	297	$ 372,690	$1,443,450

Express companies are usually better organized than *kuo t'ang* hong, and the larger types have five departments —manager's office, accounting office, canvassing office, loading and unloading office, and ware house, each doing the special work indicated by its name. *Kuo t'ang* hong are mostly owned by individuals, and are managed usually by the owner himself, with one assistant who takes charge of the books, correspondence, and miscellaneous work. Sometimes, though only rarely, a manager other than the owner takes charge of the business.

The total capital of the express companies and *kuo t'ang* hong in Hangchow is the largest of any district in the Province, as shown by the preceding table, due to the fact that there are more of these firms in that Municipality than in any other district. The average capital of firms in Hangchow is only a little more than a thousand dollars but in Ninghsien, on account of the large volume of marine transportation handled, firms usually have a capital of more than $10,000, while concerns in districts like Hsiaoshan and Shaohsing can start business with a capital of only a few hundred dollars.

The *kuo t'ang* hong in Chekiang are all registered with the municipal or district governments, and no firm is permitted to do business without a license from the proper authority. There are two kinds of license, one permitting the holder to do business for ten years, while the other is valid for only one year. The taxes on a *kuo t'ang* hong vary according to location, business and capital.

The following is a list of all the express companies and *kuo t'ang* hong in Chekiang:—

HANGCHOW

	Location	Nature of Business	Capital	Annual Turnover
Fu Chi	(福 記)	*Kuo-Tang* hong	$6,500	$62,000
Kuang Ta Yuan	(廣大源)	„	6,000	52,000
Hsin Ch'eng	(信 成)	„	6,000	52,000
Ts'ao T'sai Chi	(曹采記)	„	5,000	52,000
Ta T'ung	(大 同)	„	5,000	41,200
Chin Ta Ch'ang	(晉大同)	„	5,000	32,000
Yü Ta Chi	(裕大濟)	„	4,000	31,000
Hsin Chi Co.	(新記公司)	„	2,500	30,000
Hua Hsing Ch'ang	(華興昌)	„	1,200	28,000
Lien T'ai	(聯 泰)	„	3,800	25,000
Wan T'ung	(萬 通)	„	4,000	22,800
Yung Ta Heng	(永大衡)	„	4,000	22,000
Hsü Lung P'u	(徐龍浦)	„	2,000	21,000
Han Ta Lai	(韓大來)	„	2,000	20,000
P'an Hung Hsien	(潘宏先)	„	1,500	20,000
Tung Chu T'ai	(同朱泰)	„	1,500	20,000
Ping Chi	(丙 記)	„	800	20,000
Yung T'ai Yuan	(永泰源)	„	3,200	20,000
Yü T'ung Yuan	(裕通源)	„	1,000	12,000
Yü Ta	(裕 大)	„	1,200	11,000
Ho Chi	(和 濟)	„	1,400	11,000
Heng I Hsin Chi	(恆益新記)	„	4,500	12,000
Hung Pei Hai	(洪佩海)	„	1,600	12,000
Hsieh Chi	(協 記)	„	2,000	12,000
95 other *Kuo Tang* Hong		„	72,650	430,540
Shen Ta Hsin Chi	(慎大新記)	Express Co.	1,000	16,000
I Chi (Branch Office)	(毅記分號)	„	2,000	14,000
Nan T'ung Fu	(南通復)	„	1,200	12,000
Ta Lien Hsieh	(大聯協)	„	1,800	8,500
Chi Ch'eng	(濟 成)	„	1,200	11,000
Yü T'ung Ho	(裕通和)	„	1,000	8,500
Hung An	(宏 安)	„	1,500	8,400
Yung Ta Hsiang	(永大祥)	„	1,200	8,200
Hsieh Ta Hsing (Branch Office)	(協大興 分號)	„	3,200	7,200
Ting T'ung	(鼎 通)	„	400	6,400
Hung Ta Hsieh Chi	(宏大協記)	„	1,000	6,000
Yü Ta Chi	(餘大濟)	„	400	6,000
Nan Fa	(南 發)	„	600	5,600
An Tai Co.	(安泰公司)	„	800	5,600
Wang Ju Chi	(王如記)	„	1,000	5,400
Mo Ts'ai Fu	(莫財富)	„	1,800	5,400
Kung I Hsieh Chi	(公益協記)	„	3,000	5,200
Mou Hsing Kung Chi	(茂新公記)	„	1,000	5,240
Wan Li Yü	(萬利裕)	„	1,000	5,240
San Chi Kung	(三濟公)	„	600	5,120

	Location	Nature of Business	Capital	Annual Turnover
Ta Feng An	(大豐安)	Express Co.	$ 1,000	$ 5,000
I Ta Co.	(義大公司)	,,	800	5,000
Kung I Ho	(公益和)	,,	500	5,000
Yung Hsin	(永 新)	,,	800	5,000
61 other Express Companies		,,	46,510	170,420
	NINGHSIEN			
Ninghsien-Fenghua Motor Transport Co.	(鄞奉汽車貨運公 司)	Express Co.	$40,000	——
Ninghsien-Shaohsing Transport Office	(浙路寧紹轉運處)	,,	10,000	——
Hui T'ung	(滙 通)	,,	——	——
Yuan Chi	(源 記)	,,	1,500	——
Kung I	(公 益)	,,	1,000	——
Yueh Li	(越 利)	,,	15,000	——
Lien I	(聯 益)	,,	——	——
Ningpo-Yuyao shipping-office	(寧餘航業轉運處)	,,	2,000	——
Tung Ho Co., Branch	(通和分公司)	,,	——	——
Shen Ta Yung Chi	(慎大甬記)	,,	15,000	——
Yung An	(永 安)	,,	10,000	——
	HSIAOSHAN			
T'ung T'ai	(同 泰)	Express Co.	$2,000	——
Yueh Hsing	(越 興)	,,	1,000	——
Shang Lien	(商 聯)	,,	1,000	——
Shen T'ai	(慎 泰)	,,	2,000	——
Kung I	(公 益)	,,	1,000	——
Ts'ai Huan Lun	(蔡煥輪)	*Kuo-Tung* hong	400	——
Yang Sung Chi	(楊嵩記)	,,	500	——
T'ang Heng Ta	(湯恒大)	,,	600	——
Shen Tsun Tao	(沈遵道)	,,	500	——
Yung Li Chuan Chi	(永利占記)	,,	600	——
Shen Pa Fang	(沈八房)	,,	500	——
Yü Chi	(裕 記)	,,	600	——
Jen Ta	(仁 大)	,,	700	——
Chü Ho	(聚 和)	,,	600	——
T'ai Sheng Hsiang	(泰生祥)	,,	——	——
Kung I	(公 益)	,,	——	——
Fu San Fang	(富三房)	,,	——	——
Jen Ho	(人 和)	,,	——	——
Lai Chao Sung	(來朝松)	,,	——	——
Chung Ta Ch'un	(鍾大椿)	,,	——	——
Hsieh Heng Hsiang	(協亨祥)	,,	——	——
Shen Wei Ch'uan	(沈衛全)	,,	——	——
Tai Yung Ts'ing	(戴永清)	,,	——	——
T'ung Hsing	(同 興)	,,	——	——

	Location	Nature of Business	Capital	Annual Turnover
Ch'en Yin Chi	(陳隆記)	*Kuo-Tang* hong	——	——
Wang T'ien Mu	(王天木)	,,	——	——
T'ai Ho	(太 和)	,,	——	——
Tai Li Ming	(戴禮明)	,,	——	——
Tai Lu Fang	(戴六房)	,,	——	——
Tsien Lu Fang	(錢六房)	,,	——	——
Chou Chin Chuan	(周森川)	,,	——	——
Wang Hsiang Ho	(王祥和)	,,	——	——
Ts'ao Ta Pen	(曹大本)	,,	——	——
Ju Yen Kung Chi	(汝延公記)	,,	——	——
Fu Wan Ch'eng	(富萬成)	,,	——	——
Tai Chi Pin	(戴企賓)	,,	——	——
Fu San Fang	(富三房)	,,	——	——
Shen Kung Chi	(沈公記)	,,	——	——
Jen Kung Ta	(仟公大)	,,	——	——
Yuan Yuan Sheng	(源源生)	,,	——	——
Yu Jen Yuan	(俞任元)	,,	——	——
Hua Chin Kui	(華金貴)	,,	——	——
Wang Ch'un Chi	(王春記)	,,	——	——
Ch'en Teh Chi	(陳德記)	,,	——	——
Yung Sheng	(永 升)	,,	——	——
Kung Ch'i Chi	(孔岐記)	,,	——	——
Kung Lan Chi	(孔蘭記)	,,	——	——
Hsieh Tung	(協 通)	,,	——	——
Pao Tai Shun	(保泰順)	,,	——	——
Kung Chiu Chi	(孔九記)	,,	——	——
Hsieh Hsing Ho	(協興和)	,,	——	——
Hsü Ping Chi	(徐炳記)	,,	——	——
Cheng Ho	(正 和)	,,	——	——
Ta Ch'ang	(大 昌)	,,	——	——
I Ta	(一 大)	,,	——	——
Kao T ien Hsiang	(高天祥)	,,	——	——
Yeh Ch'ang Shun	(葉長順)	,,	——	——
Chao Sung Hsing	(趙松興)	,,	——	——
Hsiang Ho Wei Chi	(祥和偉記)	,,	——	——
Han Ch'ang Fa	(韓常發)	,,	——	——
Ta Ch'eng	(大 成)	,,	——	——
Tsu Ts'ing	(子 清)	,,	——	——
T'ien Hsiang	(天 祥)	,,	——	——
Yung Ho	(永 和)	,,	——	——
Wang Chu Lin	(汪楚林)	,,	——	——
Wang Hsieh Ch'eng	(汪協成)	,,	——	——
Ch'ien T'ai	(乾 泰)	,,	——	——
Ni Jen Shen	(倪仁興)	,,	——	——
Ni Wan Li	(倪萬利)	,,	——	——
Ni Chiung Shang	(倪炯尚)	,,	——	——

SHAOHSING

	Location	Nature of Business	Capital	Annual Turnover
Hsin Yung Chi	(新永記)	*Kuo-Tang* hong	$100	----
Liu T'ai Kung	(劉泰公)	,,	150	----
Wu Chu Sheng	(吳聚盛)	,,	150	----
Hsieh T'ai Hsing	(協泰興)	,,	150	----
I Yuan Mao	(怡源茂)	,,	100	----
Teh Chi	(德 記)	,,	150	----
Jen Ch'ing Chi	(任慶記)	,,	150	----
Hu Yu Chi	(胡有記)	,,	150	----
Yang Jen Chi	(楊仟記)	,,	150	----
Ku Teh Hsing	(顧德興)	,,	150	----
Shen Kiang Chi	(沈江記)	,,	150	----
Pao T'ai Jen Chi	(保泰仁記)	,,	100	----
Chen Hsing	(振 興)	,,	140	----
Yang Ch'un Chi	(楊春記)	,,	150	----
Yung T'ai	(永 泰)	,,	150	----
Cheng T'ai Hsing	(正泰興)	,,	150	----
Lin Chi	(林 記)	,,	100	----
Chin K'ang Hsin	(晉康辛)	,,	200	----
Yang Chun Yu	(楊君佑)	,,	150	----
Yung Mao Yun Chi	(泳茂云記)	,,	150	----
Kung Mao	(公 茂)	,,	200	----
Ho Chi	(和 濟)	,,	150	----
Cheng Ho Fang Chi	(正和芳記)	,,	150	----
Han Mao Lin	(韓茂林)	,,	150	----
Hsin Ch'ang Kung	(信昌公)	,,	150	----
Ho Chi	(和 濟)	,,	150	----
Wu Feng Tseng	(五豐增)	,,	150	----
Wan Pao Sheng	(萬寶生)	,,	150	----
Sheng Ta Ch'eng	(森大成)	,,	150	----
Ch'en Chü Lai	(陳車來)	,,	150	----
Teh Hsing Fang Chi	(德興芳記)	,,	150	----
Yeh Chao Feng	(葉兆豐)	,,	150	----
Yuan Jen Yü	(元仁昱)	,,	150	----
Yü Yuan	(裕 源)	,,	120	----
Kung I	(公 益)	,,	150	----
Hu Hua Chi	(胡華記)	,,	150	----

YUNGK'ANG

Lü Chung Ho	(呂中和)	Express Co.	$ 1,000	$ 1,600
Ying Kuang Yü	(應廣裕)	,,	1,000	1,600
Hsieh Ho	(協 和)	,,	1,000	1,600
Wan T'ung	(萬 通)	,,	1,000	1,600
Yü T'ung	(裕 通)	,,	1,000	1,600

LINHAI

	Location	Nature of Business	Capital	Annual Turnover
Wang Yung Hsing	(王永興)	*Kuo Tang*	$ 500	$ 800
T'ung Ch'ang	(同昌)	„	600	——
Hsieh Chi	(協記)	„	3,000	——
Lei Fu Ch'eng	(雷阜成)	„	100	400
Hsin Fu T'ai	(新福泰)	„	100	450
T'ai Kung Hsin	(台公新)	„	100	300
Kung Hsin	(公信)	„	500	440

YUYAO

Ningpo-Shaohsing Transport Company	(寧紹轉運公司)	*Kuo Tang*	$ 5,000	$ 3,300
United Transport Office	(寧紹餘杭等公司辦事處)	„	——	2,800

CHIENTEH

Wan Li T'ung Co.	(萬利通行)	*Kuo Tang*	——	$ 100

SHOUCH'ANG

Hsieh Heng T'ai	(協恒泰)	*Kuo Tang*	$ 1,000	$ 1,000

CH'ENGHSIEN

Jen Chang Hsing	(仁昌興)	*Kuo Tang*	$ 3,000	——
I Ta Kung	(義大公)	„	3,000	——
Jih Hsing Ming	(日興明)	„	3,000	——
Tu Heng Yuan	(杜恒源)	„	1,000	——
Chao Yuan Hsing	(趙源興)	„	1,000	——
Kuang Sheng Sheng	(廣盛勝)	„	1,000	——
Yuan Sheng Chin	(源盛錦)	„	1,000	——
P'an Wan Feng	(潘萬豐)	„	1,000	——
P'an Jui Hsing	(潘瑞興)	„	1,000	——

T'AISHUN

P'an Chin Yuan	(潘進源)	*Kuo Tang*	——	——
Hsia Ting Sheng	(夏鼎盛)	„	——	——
Cheng Yü Chi	(鄭裕記)	„	——	——
Hsin Yu Chi	(新友記)	„	——	——
P'an Yen Chi	(潘延記)	„	——	——
Yung Sheng	(永升)	„	——	——
Kao Chi	(高記)	„	——	——
Liu Ho Mao	(劉合茂)	„	——	——
Wang Yung Li	(黃永利)	„	——	——

LANCH'I

	Location	Nature of Business	Capital	Annual Turnover
Ying Wan Hsiang	(應萬祥)	*Kuo T'ang*	$ 800	——
Hsieh Ta Sheng	(協大升)	,,	500	——
Yung T'ai I	(永泰義)	,,	200	——
Yung Ch'ang	(永 昌)	,,	300	——
Chou Hsin Mao	(周信茂)	,,	300	——
Ying Chen Yung	(應錦鏞)	,,	500	——
Hui Feng	(惠 豐)	,,	200	——
I Sheng	(義 盛)	,,	300	——
Wan Hsiang Ching	(萬祥慶)	,,	500	——
Kung Ho	(公 和)	,,	400	——
T'ung Ta Ch'ang	(通達昌)	,,	700	——
I Ta Heng	(一大恒)	,,	100	——
Wang Chü Ho	(王聚和)	,,	400	——
Kung Chi	(公 記)	,,	200	——
Hsü Yuan Sheng	(徐源盛)	,,	800	——
T'ung Hsieh Ho	(同協和)	,,	300	——
Heng T'ai Ho	(恒泰和)	,,	500	——

TIENTAI

Chiang Pao Shan	(姜寶山)	*Kuo T'ang*	——	$ 600
Hsü I T'ai	(許義泰)	,,	$300	800
Chiang Hsieh Hsing	(姜協興)	,,	——	600
Kung I	(公 益)	,,	——	300
Wang Chai Ch'ang	(王載昌)	,,	——	500

KIANGSHAN

Wu P'ei T'ang	(吳佩堂)	*Kuo T'ang*	——	——
Chu Keh Mao	(朱克茂)	,,	——	——
Wan Shou Sung	(萬壽孫)	,,	——	——
Wang P'u Hsia	(王溥洽)	,,	——	——
Chu Yü Lai	(祝與來)	,,	——	——
Yang Hsueh Tao	(楊學道)	,,	——	——
Chou Tien T'ang	(周秩堂)	,,	——	——
Chou Hsi Cheng	(周希正)	,,	——	——
Wan Shen Wu	(萬慎吾)	,,	——	——
Chou Cheng Kung	(周增剛)	,,	——	——
Wu T'sing Hui	(吳清輝)	,,	——	——
Hsü Shan Hsing	(徐善興)	,,	——	——
Chou Hsi Ta	(周希達)	,,	——	——
Wan Ho Shih	(萬何氏)	,,	——	——
Wu Yü	(吳 玉)	,,	——	——

CH'ANGSHAN

	Location	Nature of Business	Capital	Annual Turnover
				Commission
Yang Yuan Ch'ang	(楊源昌)	*Kuo T'ang*	——	$300
Liu T'ai Lai	(劉泰來)	〃	——	500
Hsü Teh Yuan	(徐德源)	〃	——	500
T'ung Chi Ch'ang	(同濟昌)	〃	——	400
Hsü Yueh Lai	(徐悅來)	〃	——	200
Yang Teh Ch'ang	(楊德昌)	〃	——	400
Chang Chun T'ai	(張鈞泰)	〃	——	500
Hsu Hung Fu	(徐鴻孚)	〃	——	200
Lu Jun Hsiang	(陸潤祥)	〃	——	500
Chou Yuan T'ai	(周元泰)	〃	——	200
Hsü Heng Ch'uan	(徐恆川)	〃	500	500
Fu Yuan Ch'eng	(傅元成)	〃	——	400
Yuan T'ai Ch'ang	(源泰昌)	〃	500	500
Chou Lu Shun	(周六順)	〃	500	500
Shu Yu Chi	(舒裕記)	〃	500	500

LISHUI

Ting Hsin	(鼎 新)	*Kuo T'ang*	——	——
Kung Shun Li	(公順利)	〃	——	——
Ta T'ung	(大 通)	Express Co.	$600	$2,000
I Ch'ang	(義 昌)	〃	1,000	4,000

CHAPTER VII

WAREHOUSES

AS THE business of warehousing largely depends upon the quantity of goods handled, the warehouses in Chekiang are usually much smaller in scale than those in Kiangsu, and are composed of the following six groups:—

Wharf warehouses.—These are established by shipping companies for convenience in handling cargo.

Bonded warehouses.—These are wharf warehouses permitted by the Customs Administration to store goods bonded against payment of duty. Goods stored in these warehouses are considered to be not imported until taken out by the consignee, consequently Customs declaration is made at the time delivery is required.

Bank warehouses.—Banks and native banks usually provide warehouses for storing goods accepted as security against advances. These include the rice warehouses established by the National Commercial Bank, Chekiang Provincial Bank, and Hangchow Savings Bank in Huhsu (湖 墅), Hangchow.

Hong warehouses.—These are established by various hongs (commission agents) for the accomodation of goods they handle.

Railway warehouses.—These are managed by the railway administrations for the temporary accomodation of goods transported by rail.

Commercial warehouses.—These are established by concerns offering storage of goods to clients, and rent for such accommodation is their principal income.

The warehouse business is most flourishing in Hangchow and Ninghsien, the two leading commercial centers in the province. There are no complete statistics regarding warehouses in Hangchow, but conditions in other districts are tabulated as follows:

WAREHOUSES IN CHEKIANG

	Number	Capital	Annual Turnover
Hangchow	3	——	——
Chiahsing	2	$13,000	$11,000
Wuhsing	1	——	30,000
Ch'anghsing	2	60,000	60,000
Ninghsien	20	25,800	56,100
Yungchia	1	——	100,000
Lanch'i	1	——	——

Warehouses in Chekiang are in most cases simple but spacious buildings, there being usually no special equipment except in wharf warehouses or those established by banks. The rice warehouses in the interior are hardly distinguishable from ordinary houses, though particular care is given to prevent leak roofs and walls and other penetration of moisture. The warehouses controlled by the railway administrations give temporary accomodation to goods transported on the railways only.

Different rates are charged for warehouse rent in different localities and groups. The bank warehouses in Huhsu charge one cent per picul per month for storing rice, while the rice warehouses in Haining and Hsiashih charge two cents, and those in Chiahsing receive about $20 as annual rent for one store room.

Chekiang warehouses, particularly those established by banks and native banks, make advances to owners of goods, accepting the goods stored as security. In Wuhsing it is a common practice for the silk warehouses to make loans to owners of stocks when the market is not favorable.

The following table shows details of the Chekiang warehouses:—

	Location	Goods Accommodated	Capital	Amount of Annual Business
Chekiang Provincial Bank Warehouse (地方銀行堆棧)	Hangchow	Rice	——	——
Hangchow Savings Bank Warehouse (杭州儲蓄銀行堆棧)	"	"	——	——
National Commercial Bank Warehouse (浙江興業銀行堆棧)	"	"	——	——
Chiahsing Bank Warehouse (嘉興銀行堆棧)	Chiahsing	Rice, Raw Silk, Cocoon, and other Cereals.	$ 7,000	$ 6,000
Ta Yu Warehouse (大有堆棧)	"	Rice, Raw Silk, Cocoon, and other Cereals.	6,000	5,000
Shen Chi Warehouse (愼記堆棧)	Ch'angshing	Raw Silk, Silk Piece goods.	——	30,000
Kuang Sheng Warehouse(廣生米棧)	"	Rice	30,000	30,000
Chi Feng Warehouse(濟豐米棧)	"	Rice	30,000	30,000
T'ung Hsing Hsieh Chi (同興協記)	Ninghsien	Fish	1,200	8,000
Wan Mao (萬茂)	"	Paper & Tobacco	3,000	10,000
T'ai Chi (泰記)	"	Sundry goods	100	1,000
Tun Chi Jen Hao (敦記仁號)	"	Rice	2,400	2,000
Kun Yuan (坤元)	"	"	500	2,500

	Location	Goods Accommodated	Capital	Amount of Annual Business
Ch'ing An (慶 安)	Ninghsien	Rice	$500	$1,500
Heng Yuan (恒 源)	"	"	500	800
Yü Lung (裕 隆)	"	"	800	2,000
Hsia Chen (洽 成)	"	Sundry Goods	600	1,000
Tun Jen An Chi (敦仁安記)	"	"	600	2,000
Ch'eng Yuan (承 源)	"	"	400	600
Ta Sheng (大 生)	"	"	300	500
Sheng Chi (昇 記)	"	"	1,200	4,000
Yung Kiang Yung Feng(甬江永豐)	"	Paper	2,000	5,000
T'ien Teh (天 德)	"	Rice Paddy	5,000	5,000
Chin Ch'ang (濬 昌)	"	Paper	2,000	3,000
Ta T'ung (大 通)	"	"	1,200	2,000
Hsiang Sheng (祥 生)	"	Rice	1,300	2,000
Ta T'ung (大 通)	"	Sundry Goods	1,000	1,400
Ta Hsing (大 興)	"	Tobacco	1,200	1,800
Chekiang Provincial Bank First Warehouse	Lanch'i	Agricultural Products and Manufactured Goods.	——	——
Hung Yuan (洪 元)	Yungchia	——	——	100,000

CHAPTER VIII

CUSTOMS BROKERS

CUSTOMS brokers are established in all ports where there are Customs-houses. There are 21 such brokers in Ningpo, 12 in Wenchow, and 13 in Hangchow. As a broker has to deposit only $400 with the Customs authorities at the time of registration, no large amount of capital is needed to start business. In Chekiang Province the average capital of these brokers is about $2,000, and when money is required to pay duty and other charges for clients, they borrow the funds needed from banks.

In addition to handling Customs formalities, these brokers undertake to see to the loading, unloading, and warehousing of goods, and sometimes provide board and lodging to clients from distant places.

In handling imported goods, a broker presents to the Customs the bill of lading received from his client, pays the duty, and clears the goods through the Customs. In handling outward shipments, an export application is submitted to the Customs authorities with the shipping order, and after the goods have been examined and the stipulated export duty paid (if any), the broker returns the shipping order to his client, who is then free to load the goods for shipment. In re-exporting goods, the process is simpler; a broker has only to submit the original bill of lading and the pass issued by the Customs when the goods were imported, and pay the re-export duty and surtax (if any).

Customs brokers derive their profit from three sources. Commission constitutes their principal income, the rate varying in accordance with the value and nature of the goods handled. Interest is charged for cash advanced in payment of Customs duties, freight, and other expenses incurred, on behalf of clients. Finally, the broker benefits by various rebates and fees. In paying freight to shipping companies, a broker gets a rebate of 4 per cent, while

in handling postal parcels for clients, a fee of from 12 to 20 cents per parcel is charged in addition to postage.

The following is a list of all the Customs brokers in Chekiang:—

		Location	Established	Capital	Annual Income
Yung Fa Yuan	(永發源)	Hangchow	——	$4,000	$71,200
Tung Hsing Yuan	(東興源)	„	——	$4,000	$8,500
Wan Feng	(萬豐)	„	——	$4,000	$12,000
T'ien Pao Chen	(天寶琛)	„	——	$2,000	$8,000
Heng I	(恆義)	„	——	$3,000	$6,500
Yung Yuan Feng	(永源豐)	„	——	$3,000	$6,000
Fei Yü Kung	(費餘公)	„	——	$1,000	$5,000
T'u Sheng Chi	(屠聲記)	Ningpo	——	$1,000	——
Hsin Chang	(信昌)	„	1900	$4,000	——
Hsi Hsing	(西興)	„	1923	$3,000	——
Chéng Feng	(承豐)	„	1900	$3,000	——
Cheng Chi	(正記)	„	1918	$500	——
Fu Chi	(福記)	„	1920	$1,000	——
Jui Sheng	(瑞昇)	„	1912	$2,000	——
Yü Feng Heng	(裕豐亨)	„	1928	$4,000	——
Yü Chi	(裕記)	„	1918	$1,000	——
Ch'eng Ch'ang	(承昌)	„	1926	$1,000	——
Teh Yü Hsiang	(德餘祥)	„	1916	$1,000	——
Hui Yuan	(滙源)	„	1928	$1,000	——
Heng Sheng T'ai	(恆升泰)	„	1869	$1,000	——
Ch'eng Chi	(誠記)	„	1922	$1,000	——
Yung An T'ai	(永安泰)	„	1897	$2,000	——
Kung Chi	(公記)	„	1930	$3,000	——
Yü Shun Kung	(餘順公)	„	——	$1,000	——
Jui Chi Yung	(瑞記甬)	„	1931	$1,400	——
Sheng Yuan	(升源)	„	——	$1,000	——
Li Ch'ang	(立昌)	„	——	——	——
Ho Yuan	(和源)	„	——	——	——
Chi Chi Hsin	(吉記新)	Wenchow	——	——	——
Lu Yung Fa	(盧榮發)	„	——	——	——
Wang Min Chih	(王敏之)	„	——	——	——
Chu Ch'un Chi	(朱椿記)	„	——	——	——
Ho Chi Hsin	(合記新)	„	——	——	——
Yung Chi Hsin	(永記新)	„	——	——	——
Hui Yuan	(滙源)	„	——	——	——
Yuan Chi Hsin	(源記新)	„	——	——	——
Ch'ang Chi	(昌記)	„	——	——	——
Hsin Chi	(新記)	„	——	——	——
Chen Ho Li	(陳合利)	„	——	——	——
Chü I Yuan	(瞿益源)	„	——	——	——

CHAPTER IX

COMMISSION AGENTS

IN CHINA all commission agents must obtain licences from the proper authorities before starting business. Prior to the establishment of the Republic, the Board of Finance was the only Government office issuing such licences, and consequently commission agents were called *ya hong* (牙行), a name by which they are known even now. In 1912 the right of issuing licences was transferred to the Financial Departments of the Provincial Governments, and according to regulation, all merchants who sell or buy for clients on commission are now considered *ya hong* or commission agents.

Two kinds of licenses are issued by the Chekiang Provincial Government, annual and seasonal. In applying for a *ya hong* licence, an applicant must secure the written guaranty of three substantial local business firms, and in the application must state the nature of the proposed business, name and address of the firm, estimate of the amount of business anticipated and commission received, and proposed date of starting business. Together with the stipulated fee, their application must be forwarded to the Financial Department of the Provincial Government through the local municipal or *hsien* government.

According to trade custom in the Province, a *ya hong* licence holder may deal in several commodities included under one general term, such as cereals, fruit, medicinal herbs, fish, marine products, live-tock, and construction materials, or in only one commodity, as raw silk, tea, timber, cotton, oil, or coal. Occasionally a licence permits the holder to deal in four specified lines, such as chickens, cabbages, animal hair, melons, cattle bones, etc.

Commission agents in Chekiang are subject to business-tax, the annual amount of which varies with the amount of business handled or commission received, as shown in the following table:—

Business Handled	Commission received	Business Tax
$100,000	$5,000	$280
$40,000	$2,500	$140
$30,000	$2,000	$105
$20,000	$1,500	$70
$10,000	$1,000	$50
$5,000	$500	$35
Below $5,000	Below $500	$20

There are 5,337 licensed commission agents in the province, those dealing in local products, rice, livestock, timber, salted goods, cereals, tea, and mulberry leaf being most numerous, as shown in the following table:—

Classes of Commission Agents in Chekiang:	
Local products	943
Rice	909
Timber	622
Oils	92
Livestock	654
Tea	432
Mulberry leaf	409
Paper	96
Salted goods and fresh fish	575
Cereals and flour	552
Other commodities	53
Total	5,337

Commission agents are found in every district of Chekiang, and are most numerous in Wuhsing, Yungchia, Chiahsing and Shaohsing. The following table shows the number of various commission agents in each district:—

COMMISSION AGENTS IN CHEKIANG

	Number	Business Handled	Commission
Hangchow:			
Local products hongs	11	$80,440	——
Timber hongs	26	297,856	——
Rice hongs	32	5,628,000	$124,500
Oil hongs	7	763,000	——
Livestock hongs	8	846,124	——
Tea hongs	16	2,883,000	145,100
Mulberry leaf hongs	44	30,450	1,500
Paper hongs	12	3,583,513	——
Salted goods hongs	20	2,434,880	——

	Number	Business Handled	Commission
Hanghsien:			
Local products hongs	23	$447,960	—
Mulberry leaf hongs	93	155,200	—
Timber hongs	5	19,000	—
Rice hongs	26	415,418	—
Livestock hongs	13	39,900	$1,240
Salted goods hongs	18	990,350	—
Paper hongs	4	204,000	—
Haining:			
Local products hongs	13	43,900	—
Timber hongs	4	21,500	—
Rice hongs	53	—	29,765
Oil hongs	2	24,800	—
Mulberry leaf hongs	61	—	97,000
Livestock hongs	20	189,700	—
Paper hongs	3	80,000	—
Salted goods hongs	5	74,000	—
Fuyang:			
Local products hongs	11	—	3,160
Timber hongs	8	27,500	—
Paper hongs	18	425,000	—
Tea hongs	79	88,200	—
Livestock hong	6	25.420	—
Mulberry leaf hong	3	2,400	—
Yuhang:			
Local products hongs	3	636,227	—
Mulberry leaf hongs	10	9,640	—
Livestock hongs	1	300	—
Tea hongs	4	108,000	—
Paper hongs	16	124,800	15,500
Linan:			
Local products hongs	6	23,000	—
Livestock hongs	3	9,000	—
Tea hongs	100	10,850	—
Yutsien:			
Local product hongs	15	43,900	—
Livestock hongs	3	14,000	—
Hsinteng:			
Local product hongs	5	24,600	—
Mulberry leaf hong	3	3,000	—
Livestock hongs	5	17,500	—
Tea hongs	3	3,000	—
Paper hongs	1	1,200	—

	Number	Business Handled	Commission
Changhua:			
Local products hongs	8	——	——
Livestock hongs	1	——	$50
Chiashing:			
Local product hongs	6	$285,000	——
Rice hongs	99	1,460,400	——
Timber hongs	12	249,000	——
Mulberry hongs	73	——	9,700
Livestock hongs	46	472,100	——
Paper hongs	5	65,470	——
Salted goods hongs	22	489,300	——
Chiashan:			
Local products hongs	8	24,100	——
Cereals and flour hongs	30	182,500	——
Livestock hongs	17	54,800	——
Salted goods hongs	18	64,500	——
Timber hongs	4	13,200	——
Haiyen:			
Cereals and flour hongs	53	288,400	——
Livestock hongs	7	23,000	——
Timber hongs	14	8,200	——
Fresh fish & salted goods hongs	7	24,800	——
Chungteh:			
Local products hongs	4	17,000	——
Timber hongs	4	23,000	——
Rice hongs	3	11,000	——
Mulberry leaf hongs	4	20,700	——
Livestock hongs	21	109,300	——
Pinghu:			
Cereals and flour hongs	1	94,750	——
Livestock hongs	30	158,600	——
Local product hongs	5	309,500	——
Paper hongs	1	4,500	——
Timber hongs	5	26,000	——
Tunghsiang:			
Cereals and flour hongs	14	66,400	——
Livestock hongs	9	4,580	——
Mulberry leaf hongs	34	40,620	——
Wuhsing:			
Local product hongs	37	295,000	——
Rice hongs	72	2,814,000	——
Timber hongs	11	155,000	——
Livestock hongs	28	465,000	——

	Number	Busines Handle	nmission
Oil hongs	14	$165,000	—
Paper hongs	6	45,000	—
Mulberry leaf hongs	2	20,000	—
Salted goods hongs	33	216,000	—
Changshing:			
Local products hongs	39	227,200	—
Cereals and flour hongs	68	2,338,000	—
Livestock hongs	15	4,900	—
Tea hongs	7	15,400	—
Mulberry leaf hongs	3	2,800	—
Tets'ing:			
Local products hongs	2	7,600	—
Cereals and flour hongs	3	12,200	—
Mulberry leaf hongs	4	4,400	—
Timber hongs	3	13,000	—
Salted goods hongs	7	28,100	—
Wuk'ang:			
Local products hongs	36	324,917	—
Mulberry leaf hongs	4	5,000	—
Tea hongs	2	19,000	—
Anchi:			
Local products hongs	17	100,000	—
Timber hongs	8	444,000	—
Livestock hongs	3	12,000	—
Tea hongs	9	10,000	—
Rice hongs	13	52,000	—
Hsiaofeng:			
Local product hongs	3	7,800	—
Livestock hongs	4	11,000	—
Tea hongs	42	55,600	—
Paper hongs	2	10,000	—
Ninghsien:			
Local products hongs	9	115,100	—
Rice hongs	9	154,000	—
Timber hongs	81	3,953,609	—
Oil hongs	5	1,760,000	—
Livestock hongs	13	304,500	—
Salted goods hongs	11	39,700	—
Tsuch'i:			
Local products hongs	17	57,110	—
Timber hongs	22	201,000	—
Rice hongs	28	157,500	—
Livestock hongs	14	112,400	—

	Number	Business Handled	Commission
hongs	3	$9,000	—
ed goods hongs	4	164,000	—
a:			
al products hongs	20	128,500	—
iber hongs	16	605,000	—
e hongs	4	17,200	—
estock hongs	12	43,850	—
l products hongs	9	77,200	—
er hongs	26	347,050	—
ngs	7	104,000	—
stock hongs	10	122,000	—
hongs	29	58,900	—
l goods hongs	23	666,400	—
h..ha :			
Local ucts hongs	56	255,700	—
Rice ongs	15	123,800	—
Timber hongs	32	262,300	—
Livestock hongs	7	32,000	—
Tea hongs	2	2,500	—
Salted goods hongs	77	482,700	—
Hsingshan:			
Local products hongs	10	51,200	—
Rice hongs	6	94,000	—
Timber hongs	6	35,600	—
Oil hongs	1	8,000	—
Livestock hongs	8	66,000	—
Salted goods hongs	23	158,000	—
Nantien:			
Cereals and flour hongs	1	4,000	—
Fresh and salted fish hongs ..	1	4,000	—
Shuohsing:			
Local products hongs	50	2,987,990	—
Cereals and flour hongs	109	2,031,000	—
Salted goods hongs	29	93,500	—
Livestock hongs	27	74,000	—
Tea hongs	12	19,835	—
Timber hongs	10	46,500	—
Mulberry leaf hongs	1	1,240	—
...oshan:			
ocal products hongs	30	107,550	$1,100
ereals and flour hongs	23	156,900	—
vestock hongs	9	18,500	800

	Number	Business Handled	Comm
Timber hongs	14	$10,260	
Salted goods hongs	9	94,000	
Repeseed oil hongs	1	——	
Mulberry leaf hongs	2	2,500	
Tea hongs	1	500	
Chuchi:			
Local products hongs	23	122,000	
Livestock hongs	29	128,600	
Tea hongs	40	49,750	
Salted goods hongs	11	24,800	
Cereals and flour hongs	6	14,000	
Mulberry leaf hongs	26	23,000	
Paper hongs	1	5,000	
Yüyao:			
Local products hongs	44	189,000	
Cereals and flour hongs	9	29,000	——
Livestock hongs	9	30,000	——
Timber hongs	34	239,600	——
Salted goods hongs	18	195,500	——
Shangyü:			
Local products hongs	26	71,500	——
Cereals and flour hongs	27	244,800	
Timber hongs	13	69,400	—
Fresh and salt fish hongs	12	40,500	——
Tea hongs	2	4,000	——
Ch'enghsien:			
Local products hongs	1	1,500	——
Cereals and flour hongs	3	6,000	——
Livestock hongs	1	2,000	——
Mulberry hongs	3	3,000	——
Timber hongs	2	5,500	——
Hsinchang:			
Local products hongs	4	13,500	——
Timber hongs	6	37,000	——
Cereals & Flour hongs	18	81,000	—
Livestock hongs	8	37,600	——
Tea hongs	27	18,490	720
Mulberry leaf hongs	25	17,440	——
Linhai:			
Local products hongs	9	75,000	—
Salted goods hongs	19	425,500	
Cereals & flour hongs	38	324,600	
Oil hongs	9	104,700	

	Number	Business Handled	Commission
boo- & timber hongs	17	$170,000	—
stock hongs	13	100,400	—
products hongs	7	20,000	—
er hongs	6	53,500	—
hongs	2	9,500	—
d goods hongs	10	67,500	—
k hongs	8	24,800	—
products hongs	14	43,260	—
& flour hongs	34	66,300	—
gs	1	3,500	—
k hongs	10	19,300	—
hongs	3	4,250	—
goods hongs	32	109,740	—
cnling:			
Cereals & flour hongs	42	209,000	—
Salted goods hongs	8	30,500	—
Local products hongs	3	15,000	—
Livestock hongs	11	41,600	—
Tea hongs	3	6,050	—
Oil hongs	3	10,000	—
ent ai:			
Local products hongs	4	20,000	—
Livestock hongs	16	80,000	—
Salted goods hongs	2	10,000	—
Cereals & flour hongs	8	46,000	—
Hsienchu:			
Local products hongs	5	16,500	—
Livestock hongs	3	3,000	—
Cereal & flour hongs	3	1,400	—
Tea hongs	2	2,000	—
Oil hongs	2	1,800	—
hinhua:			
Timber hongs	20	232,250	—
Rice hongs	20	115,780	—
Oil hongs	7	86,800	—
Livestock hongs	5	22,000	—
ach'i:			
Local products hongs	14	185,400	—
Timber hongs	26	136,500	—
Rice hongs	83	2,026,400	—
Oil hongs	16	184,800	—
Livestock hongs	28	166,060	—

	Number	Business Handled	Con
Tsaggang:			
Local products hongs	2	$10 000	
Timber hongs	6	30,000	
Rice hongs	1	5.000	
Livestock hongs	11	55,000	
Iuen:			
Local products hongs	4	191,000	
Rice hongs	4	24,000	
Oil hongs	2	15 000	
Timber hongs	1	5,000	
Tea hongs	1	5,000	
Livestock hongs	4	20,000	
Yungkang:			
Paper goods hongs	4	18,100	
Local products hongs	4	12,600	
Timber hongs	5	24,700	
Rice hongs	2	19,000	
Livestock hongs	4	231 800	
Wui:			
Local product hongs	3	11.460	
Timber hongs	3	9,500	
Rice hongs	3	25.000	
Tea hongs	15	44,800	
Livestock hongs	2	7,000	
Paper goods hongs	3	31,081	
Oil hongs	1	17,000	
P'ukiang:			
Timber hongs	11	74.000	
Livestock hongs	1	10,000	
T'angchi:			
Rice hongs	1	1,100	
Ch'ihsien:			
Local products hongs	17	143,753	
Timber hongs	25	208,800	
Rice hongs	36	70,825	
Oil hongs	3	23.500	
Livestock hongs	4	42,000	
Tea hongs	2	6 960	
Paper hongs	2	2,500	
Langyu:			
Local product hongs	5	15,200	
Cereal & flour hongs	14	169,700	

	Number	Business Handled	Commission
Timber hongs	15	$149,500	——
Livestock hongs	1	2,000	——
Paper hongs	2	9,000	——
Oil hongs	1	9,000	——
an:			
al products hongs	6	17,300	——
mber hongs	10	41,200	——
reals & flour hongs	42	172,800	——
stock hongs	8	31,000	1,000
an			
l products hongs	2	15,000	——
...ber hongs	1	10,000	——
Oil Cereal & flour hongs	4	30,000	——
ereal & flour hongs	3	120,00	——
Liverstock hongs	1	5,000	——
K'aihua:			
Local products hongs	3	11,000	——
hwateh:			
ocal product Hongs	3	11,000	——
estock hongs	1	2,400	——
Timber hongs	1	1,600	——
nuian:			
Local product hongs	6	25,200	——
Timber hongs	4	18,000	——
Liverstock hongs	2	10,000	——
Rice hongs	1	5,000	——
Tea hongs	3	7,450	——
T'unglu:			
Local products hongs	6	24,400	——
Timber hongs	19	166,900	——
Rice hongs	5	20,900	——
Livestock hongs	4	6,800	——
Paper goods hongs	2	6,000	——
uian:			
Livestock hongs	14	62,400	——
Tea hongs	1	5,000	——
Rice hongs	2	8,000	——
ch'ang:			
Local products hongs	1	5,000	——
Timber hongs	1	3,000	——
Livestock hongs	1	5,000	——
ea hongs	13	26,500	——

	Number	Business Handled	Commissio
Fenshui:			
Local products hongs	5	$29,500	——
Yungchia:			
Local Product hongs	18	3,955,064	
Timber hongs	18	799,465	
Cereal and flour hongs	276	1,048,138	
Oil hongs	1	——	
Livestock hongs	32	165,070	
Tea hongs	5	——	
Salted goods hongs	11	167,960	
Juan:			
Local products hongs	13	59,900	
Timber hongs	7	70,000	
Rice hongs	52	115,850	
Livestock hongs	6	8,900	
Salted goods hongs	24	178,850	
Paper Goods hongs	1	4,800	
Lots'ing:			
Local products hongs	12	24,000	
Tea hongs	2	165	
Oil hongs	3	11,700	
Salted Goods hongs	15	50,700	
Rice hongs	11	39,190	
Livestock hongs	21	31,800	
Livestock & local prod. hongs	33	151,100	
P'ingyang:			
Local products hongs	13	44,100	
Rice hongs	9	30,000	
Salted goods hongs	14	238,000	
Livestock hongs	7	25,500	
Paper hongs	6	4,600	
Tea hongs	3	4,060	
Yühuan:			
Local products hongs	18	150,400	
Timber hongs	2	9,000	
Rice hongs	25	178,500	
Oil hongs	3	8,500	
Livestock hongs	19	120,000	
Salted goods hongs	92	346,360	
Paper hongs	3	15,250	
Lishui:			
Local products hongs	4	10,500	
Oil hongs	6	27,000	

	Number	Business Handled	Commission
..	11	22,400	——
.	6	18,000	——
....	7	32,000	——
.....	5	17,000	——
.....	42	621,250	——
.....	2	10,000	——
.....	1	3,000	——
.....	9	3,700	——
.. ..	1	5,000	——
.....	1	5,000	——
h'ang:			
ce hongs	3	13,500	——
r er hongs	3	11,500	——
ivestock hongs	5	14,300	——
Pape goods hongs	4	9,200	——
h'ang:			
Livestock hongs	7	21,000	——
ecal products hongs	9	——	$1,920
mber hongs	8	41,000	——
uan:			
Local products hongs	8	41,000	——
Rice hongs	1	19,000	——
Livestock hongs	2	9,000	——
Timber hongs	3	25,000	——
Oil hongs	2	10,000	——
yuan:			
Local products hongs	11	35,950	——
h			
Livestock hongs	3	11,000	——
p'ing:			
Local products hongs	2	10,000	——